PACKAGE engineering

Do all your packaging in one place

Moving (in bulk) the production from nine scattered plants to a centralized packaging location requires attention to methods, machinery, storage and sorting areas, floor space, and packaging supplies. (See Page 37)

How six pounds of packaging save $800

Shipping a hush-hush missile part took a man to go with it—until these engineers hit on a package to protect it and yet stay within weight limits, so this packaged part can now move by air parcel post. (See Page 42)

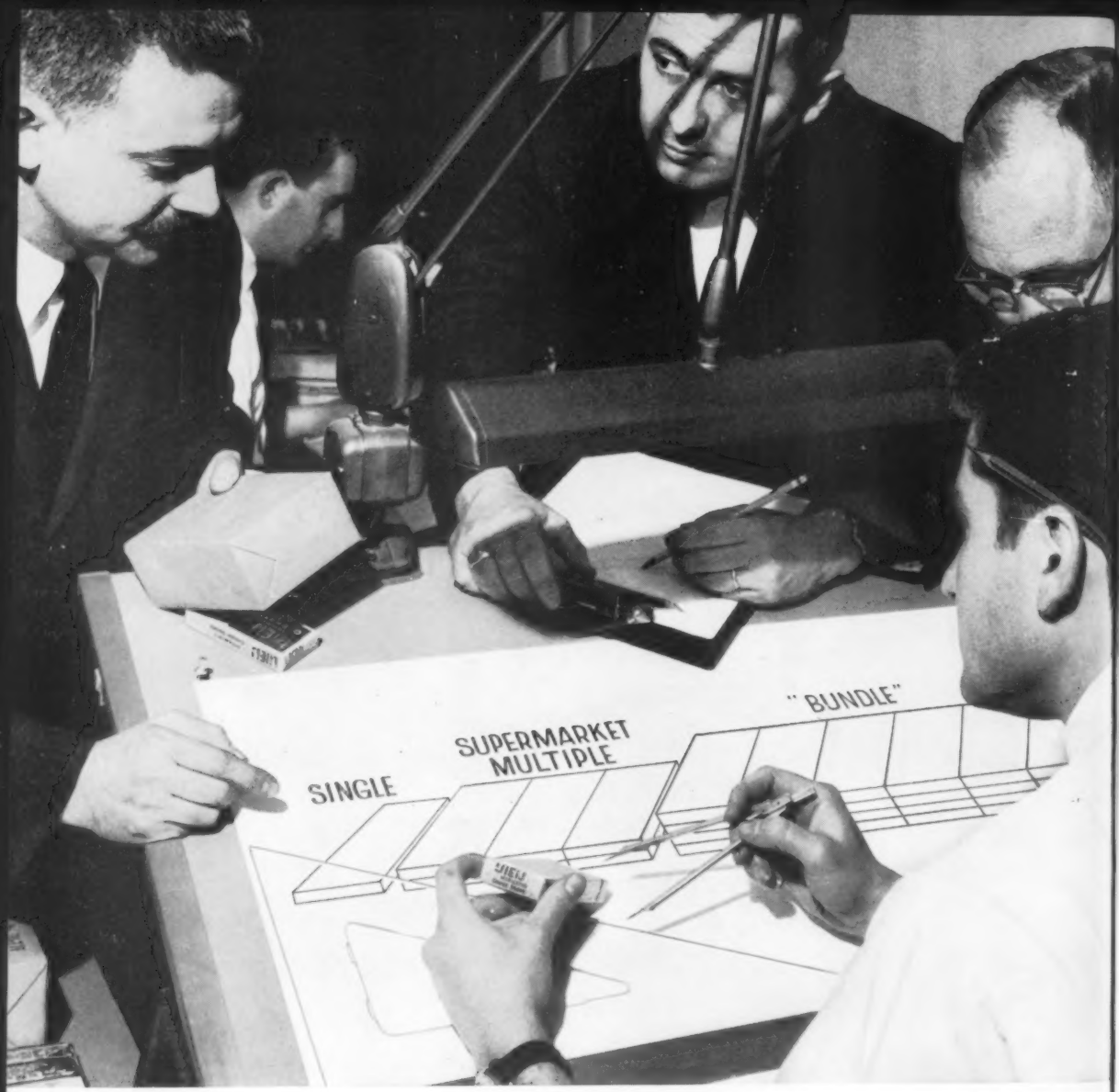
Breakthrough: frozen food in "poly" bags

Research points the way to overcoming hurdles of poor heat seals, bag damage, and lack of high-speed machinery—to open new vistas for individually quick-frozen fruits and vegetables in polyethylene bags. (See Page 47)

Complete table of contents on Page 2

NOVEMBER 1960

VOLUME 5 • NUMBER 11



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DOW'S CLINICAL APPROACH TO HEALTHY PLASTICS APPLICATION

in packaging

PACKAGES OF PELASPAN COMBINE LOW COST WITH MAXIMUM SHOCK PROTECTION

Expanded polystyrene has proved to be an ideal medium for protective packaging when its structural and energy-absorbing properties are fully utilized through proper package design. In proper design it is necessary to consider the ease and speed of molding as well as the minimum package weight if the lowest possible package costs are to be realized.

Data on material's performance and fabrication techniques have been obtained by Dow laboratories to assist package design engineers and fabricators in utilizing the unique properties of molded Pelaspan®. For example, the minimum density required to give the necessary degree of structural strength and shock protection can be specified by the designer based on the information given in Figures 2 and 3. The degree to which Pelaspan absorbs shock depends on the density of the molded part. The density of Pelaspan can be varied from one to ten pounds per cubic foot during the foaming stage providing whatever degree of protection is desired. The curves in Figure 2 illustrate the change in energy absorption with a change in density for molded Pelaspan. The curves in Figure 3 show the relationship between the structural properties of compressive and flexural strength and density.

The inherent characteristics of the material dictate the use of mold design principles specifically developed for expandable polystyrene. Proper design of wall sections is necessary to provide balance between uniform cross section and proper product protection. Also, molds must be designed for proper cooling and this will vary depending on types of molding equipment. Further design considerations are necessary to obtain accurate and uniform densities throughout the part.

Dow Plastics Technical Service engineers are working directly with container fabricators as well as end users to develop new packages and fabrication techniques using expandable polystyrene beads. Manufacturers and end users of containers are invited to consult with Dow on their container problems. Please contact your nearest Dow Sales Office or write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1877DH11.

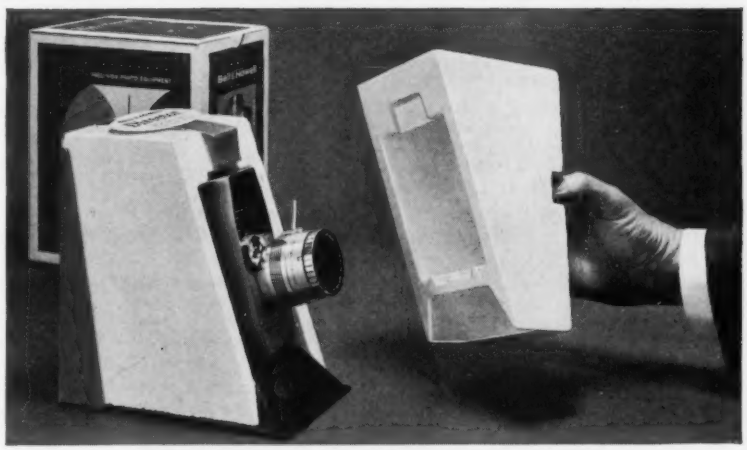

FIG. 1 Shipping package made from Pelaspan protects movie camera.

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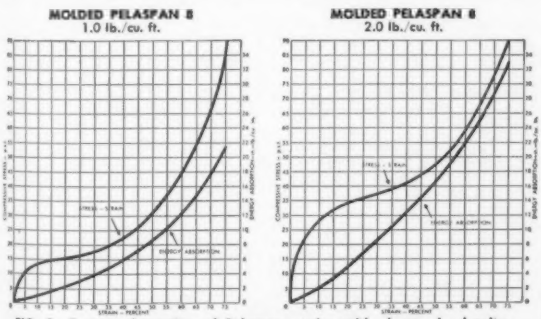

FIG. 2 Energy absorption of Pelaspan varies with change in density.

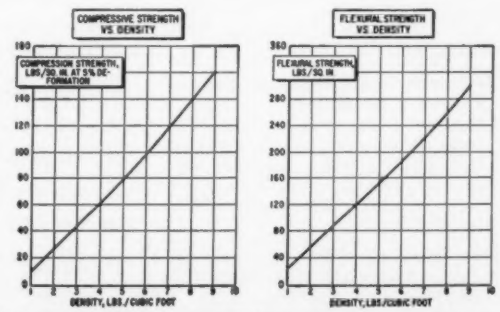
COMPRESSIVE STRENGTH VS. DENSITY
COMPRESSION STRENGTH, LBS./SQ. IN. AT 5% DEFORMATION
DENSITY, LBS./CUBIC FOOT
FLEXURAL STRENGTH VS. DENSITY
FLEXURAL STRENGTH, LBS./SQ. IN.
DENSITY, LBS./CUBIC FOOT

FIG. 3 Flexural and compressive strengths vary directly with change in density.

See "The Dow Hour of Great Mysteries" on NBC-TV

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

For your calendar

October 31-November 2. Packaging Institute 22nd Annual National Packaging Forum:
Statler-Hilton Hotel, New York, N.Y. Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, N.Y. *Telephone: MUrray Hill 7-8875.*

November 28-30. AMA orientation seminar on package design and development in the small company:
Hotel Astor, New York, N.Y. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

1961: January 22-25. Canning Machinery and Supplies Association 54th Annual Exhibit:
Conrad Hilton Hotel, Chicago, Ill. Contact: W. D. Lewis, Secretary-Treasurer, Canning Machinery & Supplies Association, 4630 Montgomery Ave., Washington 14, D.C. *Telephone: OLiver 6-6979.*

1961: January 23-25. National Canners Association 54th Annual Convention:
Conrad Hilton Hotel, Chicago, Ill. Contact: R. F. Alexander, National Canners Association, 1133 20th St., N.W., Washington 6, D.C. *Telephone: FEderal 8-2030.*

1961: February 9-10. University of Wisconsin Engineering Institute on packaging industrial products:
Wisconsin Center Building, Madison, Wis. Contact: Richard A. McCormick, institute coordinator, department of engineering, University of Wisconsin, Madison, Wis. *Telephone: ALpine 5-3311, Ext. 2815.*

1961: February 13-17. AMA packaging management course:
Hotel Astor, New York, N.Y. Contact: John L. Wood, packaging coordinator, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

1961: April 10-12. 30th AMA National Packaging Conference:
McCormick Place (new Lakefront Exposition Center), Chicago, Ill. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

1961: April 10-13. 30th AMA National Packaging Exposition:
McCormick Place (new Lakefront Exposition Center), Chicago, Ill. Contact: John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

1961: November 7-10. Packaging Machinery Manufacturers Institute Show of 1961:
Cobo Hall, Detroit, Mich. Contact: W. L. Redding, Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: ATlantic 1-8552.*

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PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

Articles

37 **One plant packages production from nine others,** by Robert Latham, manager, packaging division, The William Carter Company
Telling how effective centralized packaging can be achieved—through proper handling of operating equipment, scheduling methods, and packaging line space.

42 **Redesign result: drastic cut in shipping cost,** by Alan S. Marsden, packaging engineer, Boeing Airplane Company
Working out package for missile component—polyethylene foam gives adequate shock protection, keeps package weight within air parcel post limits.

47 **Developing new package for frozen fruit, vegetables,** by James F. Hesler, plastics division, Spencer Chemical Company
Tests show polyethylene bag can be an alternative to overwrapped carton—for individually-, not block-frozen, foods; includes tests performed and results.

58 **Recognizing a packaging problem,** by C. C. Sutton, manager, packaging development, The Quaker Oats Company
Offers five key steps for the packaging engineer to follow in determining if there is a problem and whether or not it is worthwhile to find a solution.

66 **Cut cellophane costs with better machine performance,** by Richard Kaffenberger, assistant group manager, technical service, market development and customer service laboratory, film department, E. I. du Pont de Nemours and Company (Inc.)
Pointers on keeping wrapping machines in tip-top shape (checking unwind brake, cut-off knife, sealing mechanism, etc.), thus eliminating excess wastage.

76 **Lab tests predict package performance,** by Frank A. Paine, senior scientist, packaging and conversion section, The Bowater Research and Development Company, Ltd., England
Giving a British viewpoint of package performance testing, this first part of a two-part article presents the transport test for corrugated shippers.

84 **Select the right package for a sticky product,** by William G. Louden, director of product development, Paterson Parchment Paper Company
Second part of a two-part article discusses problems of packaging sticky industrial products such as synthetic rubber and adhesive surfaces.

Package Engineering is indexed in Engineering Index

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Reader Service Cards inside back cover

Our December, 1960 issue will carry a cumulative editorial index for the year, listing our feature articles by subject, author, and other headings.

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Lots of good things come from

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Vitafilm, a Polyvinyl chloride—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

A note from the Publisher

Who buys packaging?

The only reason for the existence of business magazines is to inform —they have frequently been referred to as a continuing medium of adult education. Good business magazines inform readers two ways: first, with a sound objective editorial program, and second, with informative ads. Both are important, and to get maximum value from a business magazine you must read both.

During the course of a year, our editors travel thousands of miles in tracking down stories and talking to authors; and at the same time, suppliers spend a great deal of time and money in preparing advertisements that will clearly and forcefully show you how they can help you.

A group of PACKAGE ENGINEERING men that you, perhaps, are not too aware of is our advertising sales staff, who works with suppliers in interpreting your needs and interests to them. Obviously, no one reads only one periodical, and seldom does one individual buy anything without discussing the proposed purchase with other members of his organization. Consequently, there is always a lively discussion going on among advertising people in supplier companies regarding who is important—who can influence sales.

About a year ago we felt there was need of some basic research as to relative buying importance in the field, and we believe you will be interested in the comprehensive study made for us by Alfred Politz Media Studies to help resolve some of these questions. Our interest was in determining what departments beyond purchasing are involved in buying. It was decided that a good indication of buying importance would be the frequency with which various departments or functions are personally visited by salesmen of packaging supplies.

Five glass companies and three converters of flexible packaging materials agreed to participate in this initial study.

It was interesting to note that in large companies, salesmen spent 54 per cent of their time beyond purchasing in the areas of engineering, production and research; 22 per cent of their time in general management; 19 per cent in sales and advertising; and 5 per cent in other departments.

It was most gratifying to have the results of this study so strongly confirm the influence our readers have in selecting sources of supply.

While space does not permit a full discussion of this study, we have prepared a 6-page condensation which will be sent to you on request.

Angus J. Ray

Publisher

PACKAGE engineering®

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Anne Bernhard
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Executive and editorial offices:
185 North Wabash Avenue
Chicago 1, Illinois
Telephone: Financial 6-1440

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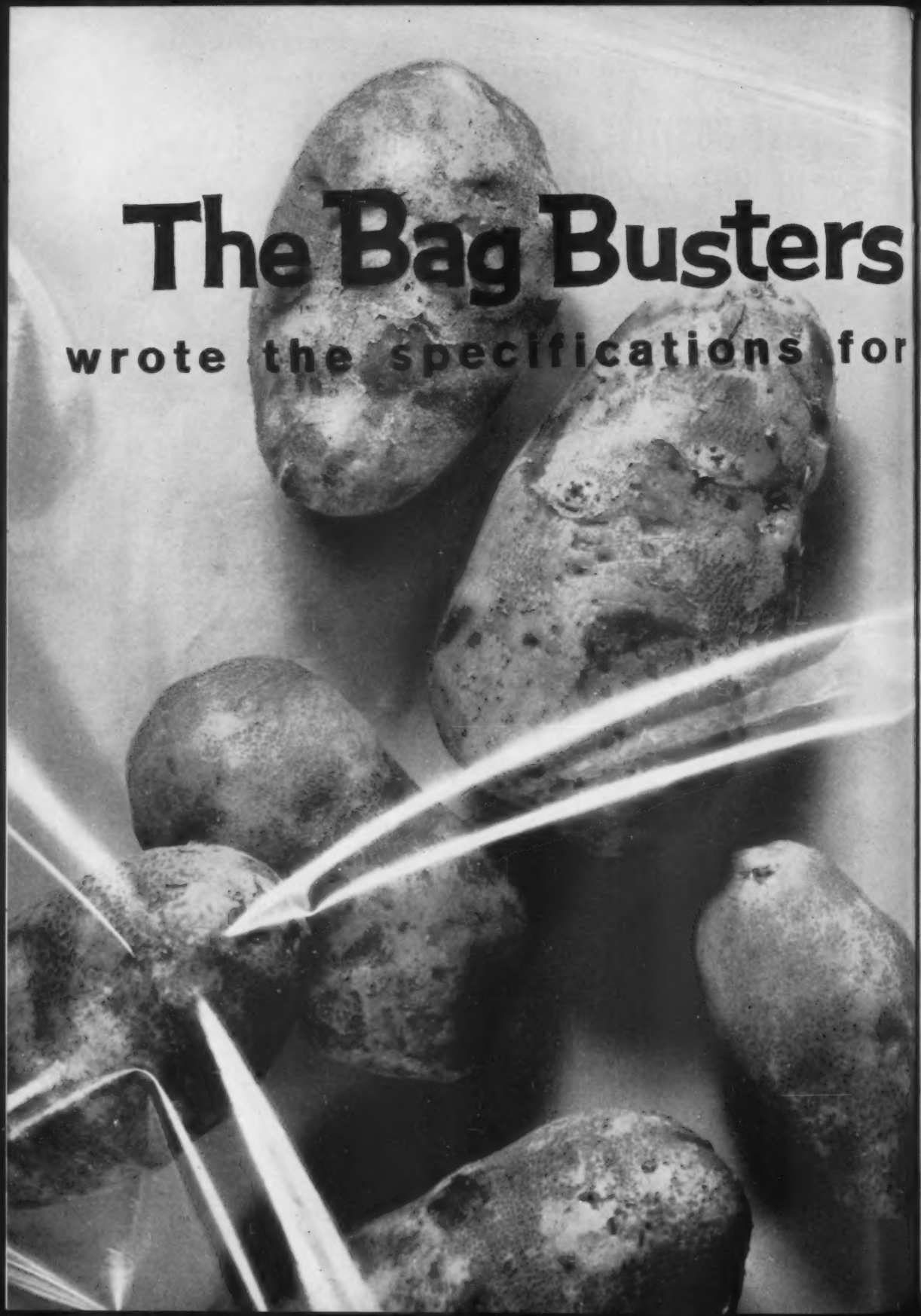
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The PULSE/of packaging

Trends to watch:

Word reaches us that when Congress convenes in January it will consider at least one bill which would authorize the Secretary of Health, Education and Welfare to extend the effective date of the FOOD ADDITIVES AMENDMENT at least one, perhaps two, years. . . . The single-wall carton continues to intrigue package users, but reports indicate their enthusiasm dims when they look at the economics of a particular application—costs of building in all necessary barrier properties may preclude its use.

Some carton experts look for a breakthrough this year or next towards effectively applying barrier coatings at the paper machine. . . . But some oil companies searching for a nonmetallic oil can (and not limiting their search to a fibre can) are looking at single-wall cartons—as an easily disposed package after use.

We hear that milk packagers, restless to replace the waxed carton (to avoid flaking, eliminate leakers), seek a more durable package to withstand the rigors of home delivery but are not sure either polyethylene or lacquer coating is the answer. Informed sources say a major container manufacturer, an equipment supplier and a large dairy are pursuing this quest.

Those attending the RESEARCH AND DEVELOPMENT ASSOCIATES (QM Food and Container Institute) MILITARY-INDUSTRY CONFERENCE on freeze-drying and other dehydration methods heard of the growing commercial use of freeze-dehydration—such as for shrimp, among others. American packagers are studying the experience, techniques and costs of European companies now processing foods commercially by freeze-drying. The process of freeze-dehydration takes water from the product after freezing it; the cellular structure is not destroyed, thus retaining flavor and texture so that the product is whole, recognizable when reconstituted.

A maker of automatic counting equipment, happily chalking up big sales increases, thinks there is "a very strong swing" to automatic counting and feeding for small parts—replacing the more common method of weighing such items. Meanwhile, however, scale manufacturers continue the refinement of their equipment, continue offering new models.

PHILLIPS CHEMICAL CO. thinks that by 1963 some 7,000,000 lb. of high density polyethylene will be blown into containers, replacing glass containers for toiletries, cosmetics, medicine and foods. . . . Meanwhile, sales of collapsible metal tubes for cosmetics, medical and pharmaceutical products climbed, according to COLLAPSIBLE TUBE MANUFACTURERS COUNCIL. This group thinks 1960 will see metal tube usage reach new highs.

Only half of the consumers who say they like "heat-in-the-bag" frozen foods have actually tried them, according to THE DU PONT CO. Householders cited convenience, taste and flavor as advantages but were not impressed by time saved, indicating to Du Pont researchers that the packages have no special appeal to housewives who work. The 1959 level of 69,000,000 heatable pouches should grow to 100,000,000 during 1960 and 300,000,000 by 1965, according to Du Pont.

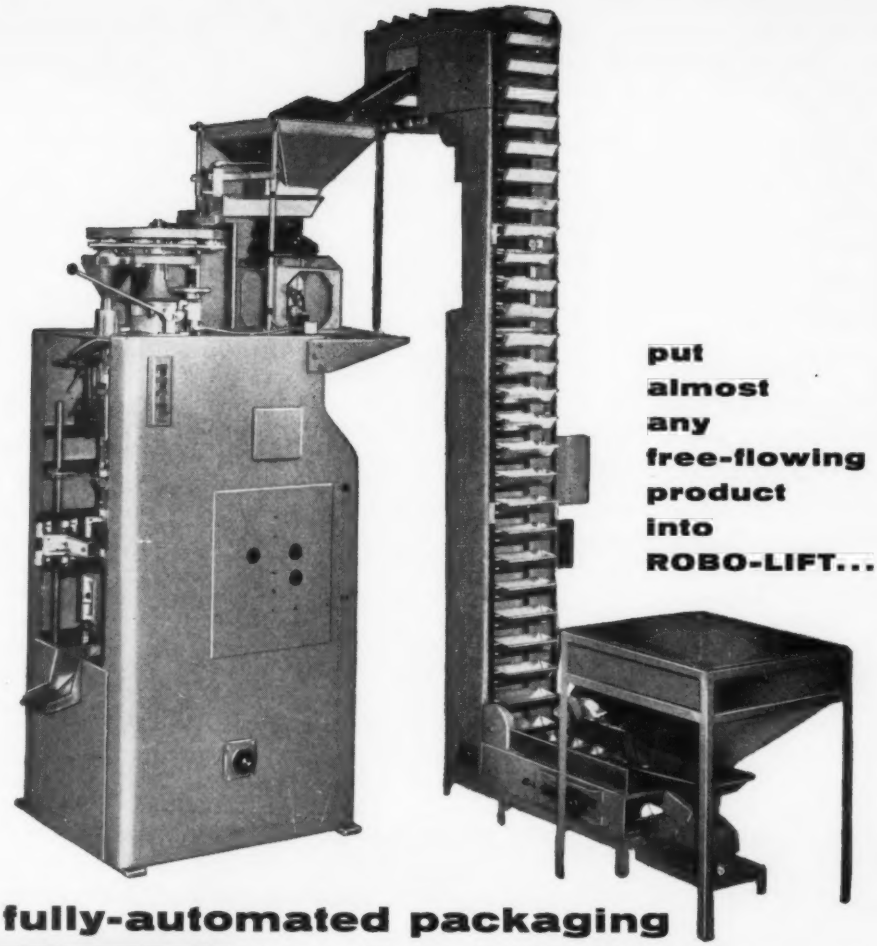
Frozen food packagers are taking a closer look at bulk containers. For example, SEABROOK FARMS CO. and PACKAGE RESEARCH LABORATORY have developed a bulk container combining a wire-bound and corrugated construction with a large polyethylene bag. Seabrook says "the apparent trend" to plastics for consumer units dictates packaging a food in frozen form, and the desirability of packing all year long instead of during a short season stresses the importance of bulk containers for frozen foods.

Conversation reaching us indicates the military is showing increased interest in boilable bags. Its people are especially intrigued by bags a soldier can heat merely by rubbing in his hands . . . GENERAL ELECTRIC CO. recently held its own three-day packaging seminar at its Hotpoint Div.

Groups in the news:

NATIONAL SAFE TRANSIT COMMITTEE INC. says its pre-shipment testing program is winning new support as a result of its consistent promotion during recent months. NSTC says the increasing shipment of household appliances and factory-sealed packages is stimulating interest in use of its Safe Transit label—currently appearing on some 600,000 containers shipped each month.

Something new in packaging education: the department of food science in the College of Agriculture, RUTGERS UNIVERSITY has a new graduate program in packaging. Its program will stress importance of properties, characteristics and performance of packaging materials, will cover production techniques, engineering of application, testing procedures and product quality control. Dr. Edward A. Nebesky, professor of food science, heads up the program, Dr.



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C. Olin Ball, department chairman, announced. Reports from industry indicate enthusiasm for this program, one such source citing with approval the practical and field work the students get along with laboratory and classroom study.

The growing number of MICHIGAN STATE UNIVERSITY school of packaging alumni are organizing a national alumni group. Some of them have already met in Chicago; others conferred in East Lansing, seeking to form a hard-core packaging group to promote people-to-people contact for sharing information and keeping the packaging grads abreast of what goes on in their field.

NATIONAL FLEXIBLE PACKAGING ASSOCIATION recently released its specifications for flexographic and rotogravure cellophane and for single-wall cellophane bags, unprinted or printed—by rotogravure or flexographic processes. It plans to issue similar spec's on polyethylene films in various converted forms and of laminated and coated products starting with extrusion coatings of polyethylene on various substrates. Interested parties may contact NFPA, 11750 Shaker Blvd., Cleveland 20, Ohio.

Notes from the government:

The U.S. ARMY SIGNAL SUPPLY AGENCY, Philadelphia, reports conversion of its packaging data coding system to the new Department of Defense Packaging Requirements Code. This new system specified in Military Standard MIL-STD-726 replaces the coding procedure issued last year in the SIG-PAK Manual. The Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., will sell you the standard "on subscription" for $1.25, representing the basic issue and approximately five supplements. The Cataloging and Packaging Division, U.S. Army Signal Supply Agency, Philadelphia, will give you information about application or interpretation of its requirements.

The BUREAU OF THE CENSUS, in cooperation with the Business and Defense Services Administration (U.S. Department of Commerce), is now making a survey to collect plastics products statistical data, is circulating Form MA (P)-30D and hopes that results of this survey lead to development of a survey to provide factual data (now practically "null and void") on plastics packaging and shipping containers, including baskets and boxes, bottles and jars, drums and carboys, formed liners, collapsible tubes, among others.

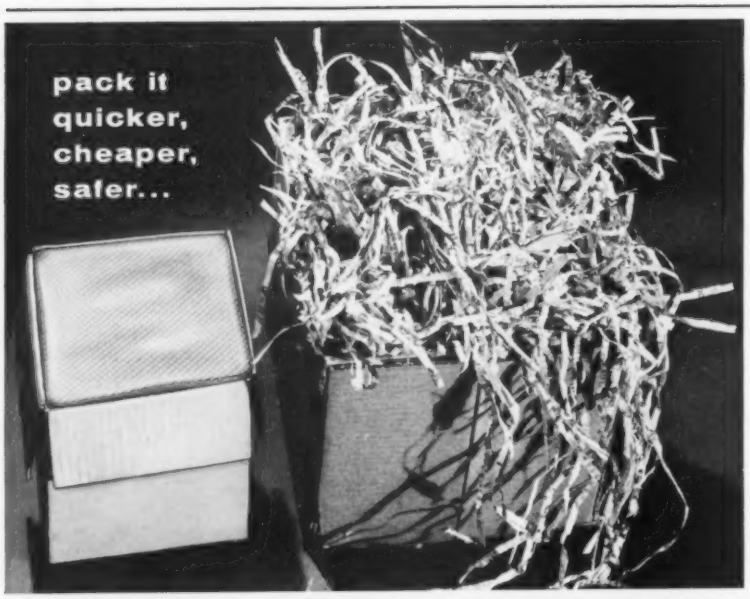
Packaging across the seas:

FRESH FOOD PACKAGING (2nd International Prepacking) EXHIBITION held this month in London is featuring electronic control units, automatic production operations, working demonstrations of bacon, cheese, meat, poultry, and potato and other vegetable prepacking and packaging. . . . CAMPO DE MEXICO, S.A., Mexican affiliate of Chicago Molded Products Corp., has acquired the plastics fabricating division of CELANESE MEXICANA, S.A., Mexico City. It will continue to manufacture the Celanese lines of polyethylene, acetate, butyrate and styrene sheet and film, among other items.

Tennessee Eastman Co. has created a Swiss corporation, EASTMAN RESEARCH A.G., located in Zurich. It plans to engage European scientists to conduct research programs independently of those pursued in the company's laboratories in the U.S. . . . IRISH PACKAGING INSTITUTE has been working closely with the Irish Export Board to improve export packaging, has been receiving "an encouraging degree" of support from industry.

More expansion for packaging:

The newly formed CPR (Chemicals Plastics Research) INTERNATIONAL CORP. will produce in excess of 500,000 lb./day of urethane polyester base at its Torrance, Calif. plant. . . . S. CURTIS & SON, INC. has acquired VAL-



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Understanding the packaging problem completely is to know how to solve it properly. That's why Triangle invests so many man hours in Preliminary Engineering. We do it to make a proposal just as carefully as before engineering a machine already on order. As a result you can depend on the equipment you're ordering, and we can guarantee it.

Will your next packaging machine perform as well as Oh Henry's?

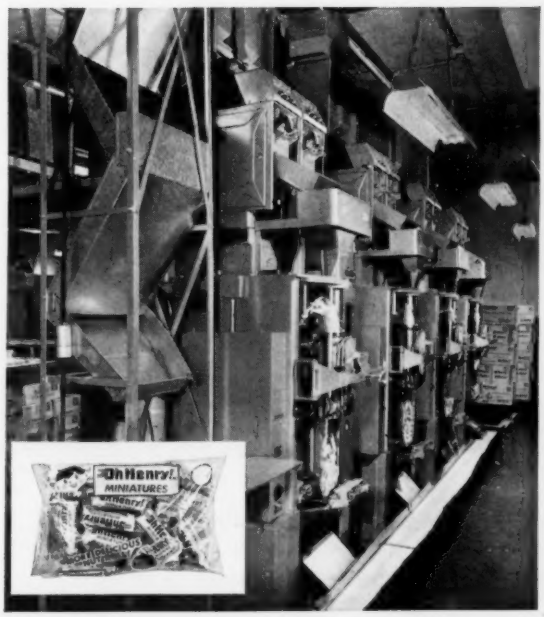
It will *if* the machinery builder is able to understand your particular packaging needs as well as Triangle understood those at Williamson Candy Company, Chicago, Illinois.

Whether you want to package miniature Oh Henry candy bars in poly bags or not, Triangle's consideration of *your needs* always begins in Preliminary Engineering. Everything that relates to the situation is analyzed and fitted into its proper place. The result is an outline of needs so complete as to permit the most practical, direct solution.

In this instance, both Williamson and Triangle knew specifically what was needed—type of machine . . . how fast it would operate . . . floor space requirements . . . how quickly the investment would be amortized—all was determined in advance.

The machine that satisfied all requirements was the Triangle single tube Bag Maker and Filler. The four machine installation is equipped with Elec-Tri-Pak scales for high speed, accurate, fully automatic operation. This remarkable single tube machine is also available as a twin, featuring independent operation of either tube.

Like so many other users of Triangle machines, Williamson Candy Company already knows what we want to show you. Why not write for our free brochure, "A Story About People, Packaging and Profit." It tells why you can depend on Triangle.



Williamson Candy Company uses a battery of Triangle Bag Maker and Filler machines to automatically package miniature Oh Henry candy bars in 7, 9, and 14 oz. printed polyethylene.

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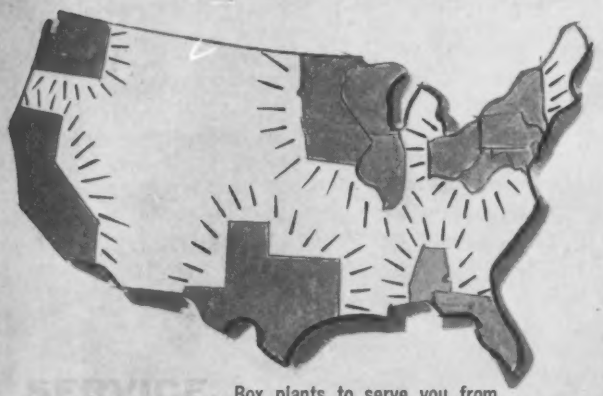
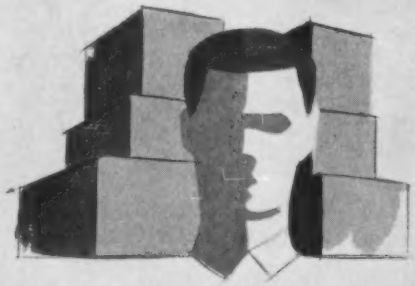


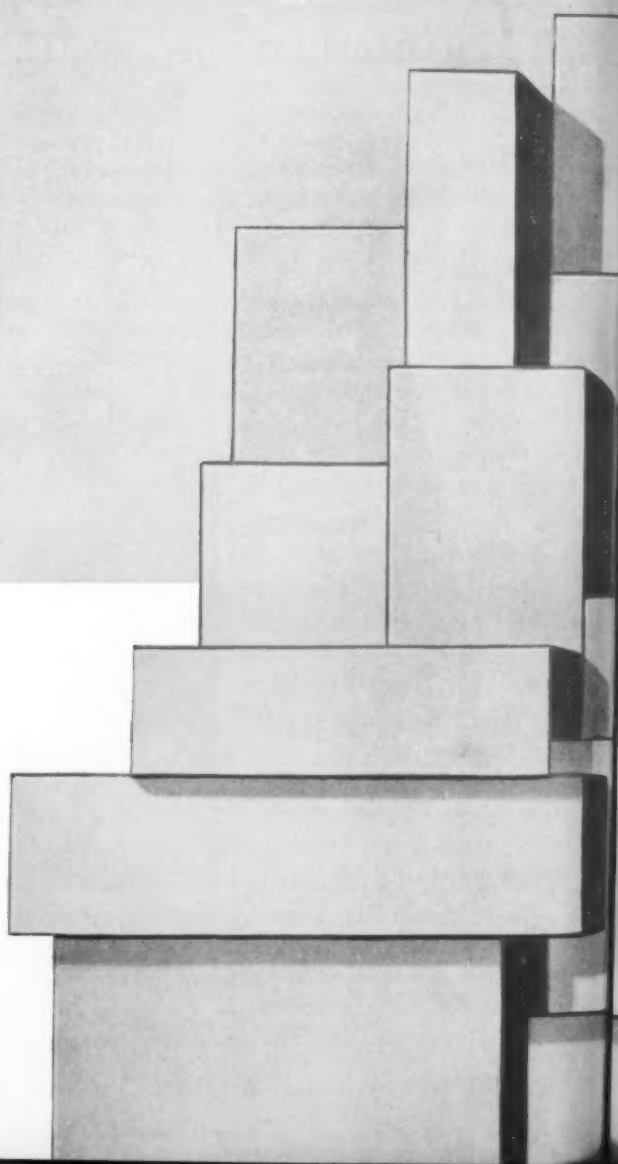
Box plants to serve you from coast to coast, in all major industrial areas.



Packaging engineers design the container that's perfect for your product.

ST. REGIS CONTAINERS · COVER THE COUNTRY ·

18-step quality-check tests liner-board, corrugated board and final box.



It all adds up. You get the most of the best from St. Regis. Nation-wide design and production facilities are at your service—with experience in all product areas.

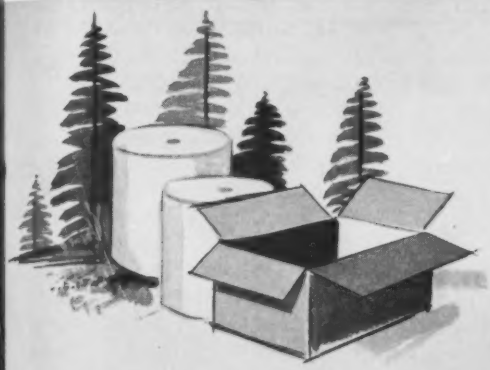
Whatever you make, St. Regis will create the corrugated box best suited to its shipping, storing, stacking, handling and selling. Every box the finest that money can buy . . . checked through rigorous quality control every step of the way.

So when you need corrugated boxes . . . simple or complex . . . call on St. Regis. Use *our* imagination.

Anything goes . . . in a St. Regis container!

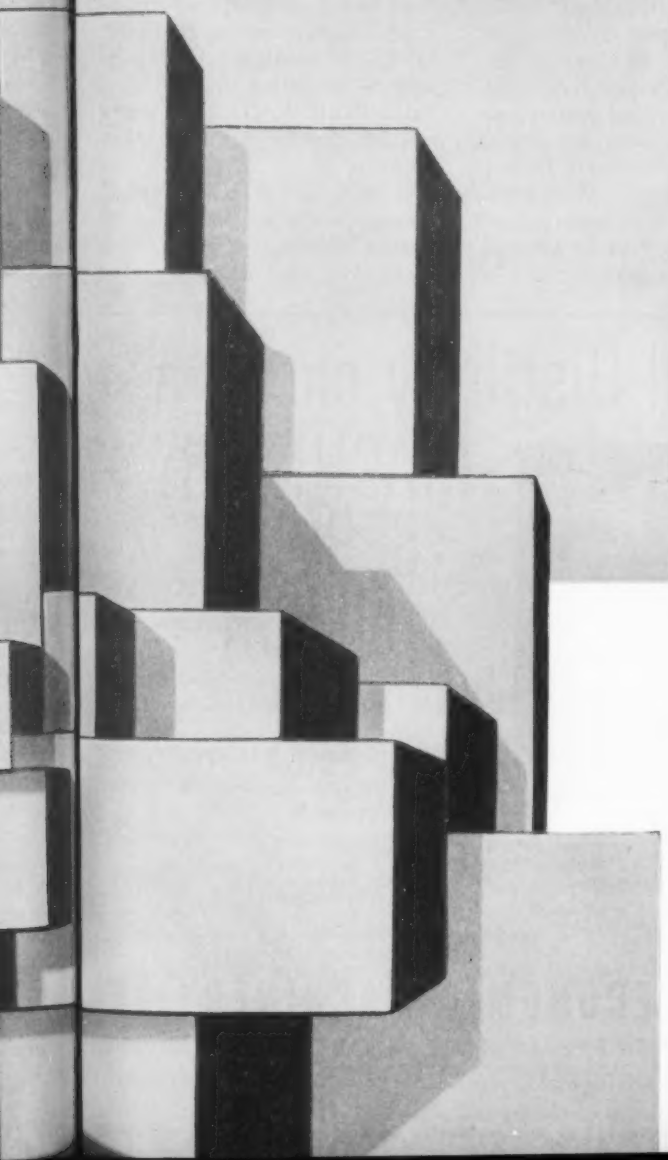
SS

WITH ST. REGIS®...



From St. Regis tree
to St. Regis box—rigid quality control all the way.

Research in
box design and materials for more efficient packaging.



From a nationwide family of fine St. Regis corrugated plants, you'll gain in many ways: Well-seasoned, imaginative designers serve you on both local and national levels • Consistent quality is assured from St. Regis tree to St. Regis box • New packaging materials continually emerge from a fully staffed research department • And you'll enjoy working with the friendly, experienced people who *are* the St. Regis Container Division!

CONTAINER DIVISION

St.Regis PAPER COMPANY

150 EAST 42nd STREET, NEW YORK 17, N. Y.

PLANT LOCATIONS: BIRMINGHAM, ALA. • FULLERTON, CALIF. • SALINAS, CALIF. JACKSONVILLE, FLA. • CHICAGO, ILL. • DUBUQUE, IOWA • HAGERSTOWN, MD. • MINNEAPOLIS, MINN. BUFFALO, N.Y. • ALBANY, N.Y. • CANTON, OHIO • CLEVELAND, OHIO • COSHOCTON, OHIO • NEWARK, OHIO • CRAFTON, PENNA. • MT. WOLF, PENNA. • PITTSBURGH, PENNA. • DALLAS, TEXAS • GARLAND, TEXAS • HOUSTON, TEXAS • TACOMA, WASH. • GRAFTON, W. VA. • MILWAUKEE, WIS.

For more information circle No. 209 on Reader Service Card

LEY-NATIONAL CORP. and will operate it as a wholly-owned subsidiary. . . . A $325,000 improvement program at OLIN MATHIESON CHEMICAL CORP.'s Huttig, Ark. sawmill is now complete.

SPOTNAILS, INC. has opened a plant at Clark, N.J. . . . TOWER PACKAGING CO. is now installed at its new polyethylene converting plant at Wheeling, Ill. . . . A new management unit, designated packaging materials group, is being formed by SUN CHEMICAL CORP. by combining its Facile and Electro-Tech divisions with two recently acquired companies, ARTISTIC MANUFACTURING CO. and DYNA-FOAM CORP.

CONTAINER CORP. OF AMERICA's new Valley Forge Marketing and Research Center is now open. . . . AMERICAN SEAL-KAP CORP. has acquired HERZ MANUFACTURING CORP. . . . KEYES FIBRE CO. plans to build a manufacturing plant in Sacramento, Calif. . . . OWENS-ILLINOIS paper products division now has 21 corrugated box plants, the latest near Minneapolis and St. Paul.

To house additional production facilities, PNEUMATIC SCALE CORP., LTD. is building a 21,000-sq.-ft. plant. . . . Expansion of RIEGEL PAPER CORP.'s research laboratory at Milford, N.J. is in progress.

F. B. REDINTON CO. has been merged into the packaging machinery division of CROMPTON & KNOWLES CORP., doubling the manufacturing capacity of that division.

What people are doing:

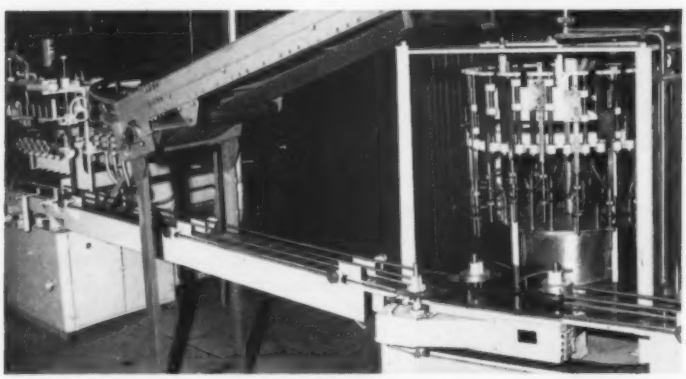
ROY ZIMMERMAN will fill the newly created post of coordinator of packaging for Independent Grocers' Alliance. . . . B.A. WARREN has been named general manager of the purchasing department, Esso Standard, division of Humble Oil & Refining Co. . . . W. R. Grace & Co., Cryovac Div., has appointed WARD WILLET to its sales development department.

Thatcher Glass Manufacturing Co. has named REGINALD L. BURD to the newly created post of vice president of container manufacturing, and JOHN T. POLLOCK as administrative manager of container products division. . . . SHELDON L. LAND is now assistant general sales manager of Container Corp. of America's West Coast division.

DR. SAMUEL GOLDBLITH, acting head of the department of food technology at Massachusetts Institute of Technology, has been named vice president and technical director of United Fruit Co.'s newly formed subsidiary, United Fruit and Food Corp. . . . Ivers-Lee Co. has promoted JAMES P. MEASDAY from general sales manager to marketing director. . . . THEODORE A. THONET is now research director of Puritan Aerosol Corp.

G. RONALD WILMER will fill the new position of general superintendent of container plants, Packaging Corp. of America. *(End)*

Why Geo. A. Dickel Distillery chose a MACHINERY SERVICE FILLER



Whether you are filling liquids in the liquor, food processing, wine, household products or chemical industry, let us show you how an MS filler can lower your packaging cost. Write for descriptive folder.

This 20 tube Rotary Vacuum Filler was selected for Schenley Distillers' new Tullahoma, Tennessee plant. Teamed up with a Machinery Service Feeder-Cleaner it is considered the best liquid filling machine for its cost because it:

- is more versatile
- can change over quickly to run several bottle sizes inexpensively
- is dependable and easier to maintain—important in a rural location

FILLS BETTER, FASTER!

ECONOMIC MACHINERY CO.

60 FREMONT ST., WORCESTER 3, MASS.

Division of George J. Meyer Manufacturing Company

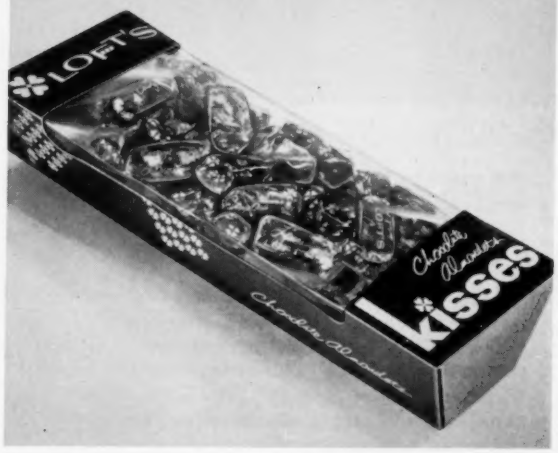
4 reasons why Mylar® is the ideal window material . . .

1. Dimensional stability unchanged by long storage

2. Tear-resistant even at sub-freezing temperatures

3. Sparkling clarity makes each box a selling showcase

4. Durable enough to make corner windows practical



Now your product can get lasting protection, more sales appeal with carton windows of "Mylar"

Now Du Pont "Mylar"* polyester film makes it possible to package products in window boxes that could previously be packaged safely only in opaque cartons. And with "Mylar" you can have two and three face windows where only one could be used before.

Why is "Mylar" the ideal window material? "Mylar" is the strongest of all plastic films. This means you eliminate costly breakage caused by shopper handling. You get better displays . . . and long, long shelf life—even for slower-moving products. Result: more profit for you.

PLANNING A NEW PACKAGE? Talk to your box maker about planning a more profitable carton package with a window of "Mylar". For a sample of "Mylar" and more information, write: E. I. du Pont de Nemours & Co. (Inc.), Film Dept., Wilmington 98, Delaware.

*"Mylar" is Du Pont's registered trademark for its brand of polyester film.

DU PONT
REG. U.S. PAT. OFF.
Better Things for Better Living
. . . through Chemistry

DU PONT MYLAR® POLYESTER FILM

SCOTCH
BRAND

TAPEnology... industry's newest cost-cutting tool

TAPE IMPROVES KODAK LABELING... PUTS SMILE IN COST PICTURE, TOO

Labeling time reduced . . . labeling costs reduced . . . neater, more eye-appealing packages . . . faster delivery service.

This is the new picture that developed at Eastman Kodak's color film processing laboratory, Fair Lawn, New Jersey, since they switched to "SCOTCH" BRAND "PAKLON" Film Tape No. 681 on their labeling operation. On at a touch, "PAKLON" Film Tape eliminated a slower, glue-pot method of labeling.

Dispensed in 3-inch strips from a specially designed "SCOTCH" BRAND Tape Dispenser, tough, transparent, "PAKLON" Film Tape covers the entire mailing label. Holds it fast so it won't fall off or tear loose. Protects printing from scuff marks, dirt, moisture—keeps label clean and easy to read—resists temperature changes—speeds package to its destination.

Processed films arrive sooner—packages are neater—customers are happier, thanks to the aid of "SCOTCH" BRAND "PAKLON" Film Tape.

What do you mail? Perhaps the tape technique proved so successful at Eastman Kodak can save you money too. Your 3M Representative will be glad to advise and assist you in exploring this and other uses for "SCOTCH" Tapes. Ask your nearest "SCOTCH" BRAND Tape Distributor for details or write: 3M Co., Dept. IAK-110, 900 Bush Ave., St. Paul 6, Minn.

When tape costs so little, why take less than "SCOTCH" Brand?

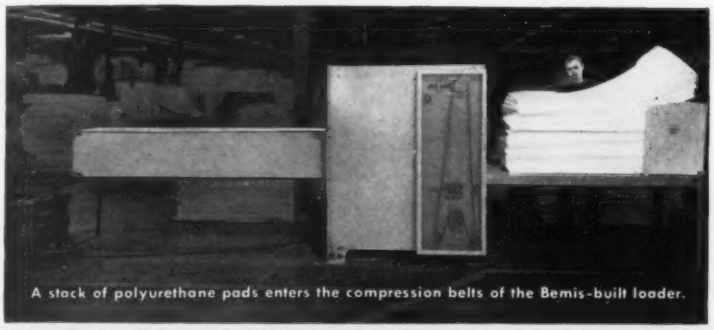
"SCOTCH" AND "PAKLON" ARE REGISTERED TRADEMARKS OF 3M CO., ST. PAUL 6, MINN.
EXPORT: 99 PARK AVE., NEW YORK 16. CANADA: LONDON, ONTARIO

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

SCOTCH BRAND
SCOTCH BRAND
SCOTCH BRAND
SCOTCH BRAND
SCOTCH® BRAND
SCOTCH BRAND

Bemis Packaging Machines generally compress costs . . . and thus expand profits. In this instance, the machine's job is to compress your products, as well as your costs.



A stack of polyurethane pads enters the compression belts of the Bemis-built loader.

Pads are compressed to 50% of original bulk under a force of about 3,000 pounds.

A Paper Specialty Bag receives the pads . . . fast, efficient, economical.

Where flexible packaging *ideas are born*

Paper Specialty Plants
1058 S. Vandeventer, St. Louis 10
Albion, N. Y., Crossett, Ark., Fullerton, Calif.

A recent development that is SAVING a nationally known company $71,900 A YEAR prompts this report, which might lead to substantial savings for you.

IT'S A COMPRESSION LOADER—

But let's start at the beginning . . . some years ago.

Bemis Paper Specialty engineers saw a way to help rubber and automobile companies in their shipment of foam rubber cushions. Paper specialty bags would be *a big improvement* over cartons. But a special *compression* loader would be needed. So Bemis engineers designed and built one. It worked. These loaders have been used successfully and profitably ever since.

But recently, polyurethane began replacing foam rubber in many usages. So, another problem: polyurethane is much harder to compress. But Bemis Packaging Service engineers built a new and improved —and successful—loader to work with Bemis Paper Specialty Bags.

The initial user has run cost studies showing it is saving $1,384 per week, compared with the previous system, or $71,968 in one year (this is, obviously, a large company; your savings might well be less). The loader paid for itself in about one month.

How do the savings come? **1.** Initial container cost (bags replace cartons). **2.** Storage space. **3.** Freight costs (many more units in the same space). **4.** Labor (fewer men load more material per hour).

Further benefits: Neater appearance of the package . . . easier disposal of the emptied package.

Rubber and polyurethane aren't all, of course. If you package *any* compressible product, better see if we can help you. We'll be more than happy to consult with your packaging engineers.

CREATIVE PACKAGING ASSISTANCE

This report is important because it points up the creativity of Bemis Paper Specialty engineers on off-beat problems . . . whether in the development of special packages, or special equipment (Bemis Panel-Pak® System for sheet materials is a good example), or both.

There's a good chance Bemis can help you. Write today.

STATUS REPORT:

Monsanto plastics for packaging & the food additives amendment

As part of Monsanto's continuing responsibility to customers and to package users, we present this up-to-the-minute status report of Monsanto plastics for food packaging and a brief definition of terms important to a general understanding of the Food Additives Amendment, which became effective March 6, 1960 ■ Monsanto's extensive research and development over the years have resulted in many plastic formulations from ingredients which are generally recognized as safe or which have prior sanction or which have no reasonable expectation of migration ■ By using the Monsanto plastics listed on the following page, you can be certain of packaging materials which comply with the Food Additives Amendment. We will keep you informed of additions.

Monsanto

MONSANTO DEVELOPER IN **PLASTICS**

The Status of Monsanto Plastics—November, 1960

PRODUCTS	BASIS FOR RECOMMENDED USE IN FOOD PACKAGING
LUSTREX® STYRENE PLASTIC	
General Purpose Molding Grades	
Hi-Flow 55, Hi-Flow 66, Hi-Flow 77, Hi-Heat 99	Generally recognized as safe and prior sanction by FDA.
Impact Molding and Extrusion Grades	
Hi-Test 42 Type, Hi-Test 48 Type, Hi-Test 88 Type, Hi-Test 180 Type	Extension granted by FDA until March 5, 1961 (Long term feeding studies highly favorable)
MONSANTO POLYETHYLENE (NATURAL)	
Injection and Blow Molding Grades: 51, 805, 52, 935, 60, 9752, 80, 705	Prior sanction by FDA.
Film Extrusion Grades: 30, 37, 18300, 31, 38, 19706, 32, 706, 23406, 33, 10406, 25706, 34, 13406, 26706	
Extrusion Coating Grades: 406, 537, 73	
VUEPAK® F CELLULOSE ACETATE	Generally recognized as safe and prior sanction by FDA.
OPALON® VINYL RESINS	
300, 300 FM, 330 FM, 410	Prior sanction by FDA.
Polyvinyl chloride acetate copolymers	
506, 510	Prior sanction by FDA.
SCRIPTITE®	
Paper and Paper Board Coating Resins	
50, 53, 52, 54	No reasonable expectation of migration when used as wax-holdout resin.
40 (Urea Resin)	Prior sanction by USDA Poultry Division as wet strength poultry package resin.
33 (Melamine Resin)	Prior sanction by FDA.
RESIMENE®	
883 (Melamine Resin)	Prior sanction by USDA Meat Inspection Division for lard cans.
U901 (Urea Resin)	Prior sanction by FDA.
LYTRON®	
Latex Paper Board Coating Resins	
6, 6-A	Not subject to regulation when used in single use disposable containers. Petition being prepared for regulation of all food packaging uses.
RESINOX® PHENOLIC RESIN	
P-97	Prior sanction by USDA Meat Inspection Division for lard cans.

DEFINITIONS

of terms important in understanding the Food Additives Amendment.

Food Additives Amendment—1958 Amendment to the 1938 Federal Food, Drug and Cosmetic Act. It requires, for the first time, that any chemical compound in food, whether intentional or incidental, must be proved safe before the food is put into interstate commerce. The amendment became effective March 6, 1960.

Food Additives—All chemical compounds in food are *not*, however, in *legal* sense food additives. Compounds with prior sanction or which are generally recognized as safe are specifically excluded by the new statute from the category of food additives.

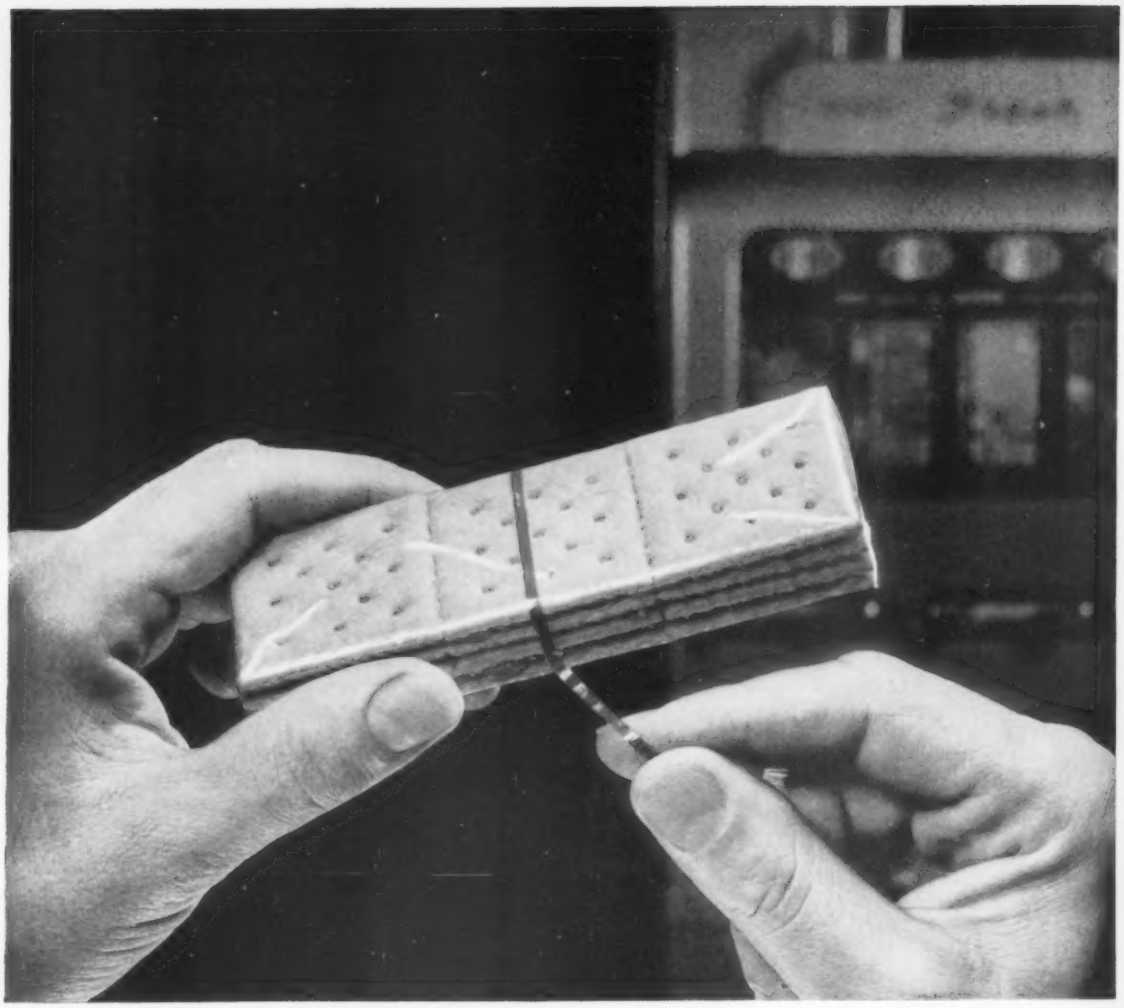
Prior Sanction—Before the 9/6/58 enactment of the Food Additives Amendment, the Food and Drug Administration and divisions of the United States Department of Agriculture had only limited authority to approve use of chemical compounds in foods. Favorable response to a request for approval normally meant an informal letter of no objection—now classified as a prior sanction—exempt under the new amendment.

Generally Recognized as Safe—The FDA interprets this to mean that it is the widely held opinion of acknowledged authorities that a given chemical compound is safe in human food. FDA has published in the Federal Register, lists of compounds which are considered generally recognized as safe.

No Reasonable Expectation of Migration—It is obvious that chemical compounds not in food cannot be food additives. But the definition of "zero" content requires scientific judgment. No reasonable expectation of migration (of pharmacological significance) realistically recognizes that infinitesimally small amounts of certain chemical compounds may be and generally are present in processed foods without hazard.

* * *

A special report on food packaging colorants has been prepared for package manufacturers using colorants in their packages. For this report, write to Monsanto Chemical Company, Plastics Division, Room 773, Springfield 2, Massachusetts.



Cut Vending Pack Wrapping Costs

WITH THE PACKAGE DF-1 MACHINE

What do you want in a vending pack wrapping machine? High-speed automatic packaging? Fast size changes? Neat, attractive wraps? Economical operation? You'll find these and other advantages built into the PACKAGE DF-1 machine, plus this big exclusive: only the DF-1 wraps the 2 on 3 pack, shown above, *without a bottom card.* Other features include: **High-speed packaging:** 130 packages a minute, in printed and registered cellophane with easy opening zip tape. **Wraps with or without card:** When desired, can eliminate the extra cost of using a bottom card. **Fast size changes:** Change in minutes from 2 on 2 pack to a 2 on 3 pack. **Tighter package:** Wraps a neater, tighter package. Saves on wrapping material. **New positive seal:** A new heater unit provides a bottom seal the complete length of package. Keeps contents fresher, longer. **Less breakage:** Very gentle handling reduces breakage, saves money.

The DF-1 can be fed automatically with one or two Quality sandwich makers for a complete high-speed vending pack operation. Find out how the DF-1 can cut your packaging costs. Call your nearest Package representative today.

PACKAGING IS PART OF YOUR PROFIT PICTURE

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.

NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO • KANSAS CITY
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PACKAGE

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Circle No. 216 on Card ▶

Even the most volatile flavors

are locked in by Du Pont cellophane

Do you package your product 1, 6, or even 9 months in advance? Du Pont cellophane can keep it fresh. Volatile oils and flavorings (like the one you're sniffing now) are retained; candy, cookies, chips and cereals stay fresh and flavorful. A variety of coatings enables cellophane to give your product the *exact* protection it needs.

There's a special Du Pont cellophane for every job. (Altogether, you have the choice of over 100 different Du Pont cellophanes.) A Du Pont Representative will be glad to show you which one is best for your product. Call him today, or write: Du Pont Co., Film Dept., Wilmington 98, Del.

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT cellophane

C & K plant, soon to be occupied, provides ultra-modern engineering and manufacturing facilities close to air and surface transportation in Agawam, Mass.

CROMPTON & KNOWLES
C&K
PACKAGING CORPORATION

Stands out in PACKAGING

CROMPTON & KNOWLES Packaging Corporation and F. B. REDINGTON Company combine to better serve the packaging industry.

Two well-known names in automatic packaging now join forces to offer packagers a specialized engineering organization second to none... a complete line of automatic machines... prompt, nationwide service.

Crompton & Knowles Packaging Corporation and F. B. Redington Co. have merged into one company, dedicated to serving the packaging industry. Redington—for 63 years a leading manufacturer of highest quality automatic machines for cartoning, wrapping, and special packaging. C & K—noted for its high-speed, automatic WRAP-KING wrapping machines and case-forming, packing, and sealing equipment.

To all companies that require highly efficient and economical packaging machinery lines to handle their products, this joining of forces offers:

- **a broad and highly specialized engineering organization with an extensive background of experience and ability in dealing with all types of packaging machinery problems**
- **a complete line of automatic machines to handle your total packaging operation**
- **a strong, nationwide sales and service organization to provide you with fast service anywhere in the U. S. and Canada**

Whatever your packaging requirements may be, from a single machine to a completely integrated project involving totally new packaging concepts, do not hesitate to put this dynamic new force in packaging to work for you. Crompton & Knowles Packaging Corporation, Holyoke, Mass. F. B. Redington Company, Division of Crompton & Knowles Packaging Corporation, Bellwood, Illinois.

since 1897

REDINGTON

AUTOMATIC MACHINES for CARTONING WRAPPING ★ SPECIAL PACKAGING

Redington plant has modern facilities near Chicago for the development and manufacture of specialized packaging machinery.

SUS-RAP

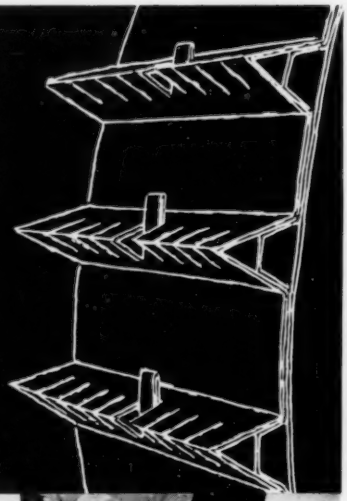
PROVIDES "*complete*" SUPPORT, SUSPENSION, AND SHOCK ABSORPTION FOR YOUR PRODUCT

SUS-RAP

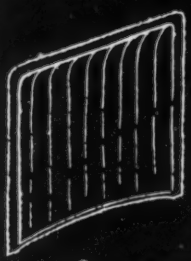
IS AVAILABLE IN STANDARD MULTIPLE SLOTTED SIZES OR MADE TO YOUR SPECIFICATIONS

SUS-RAP

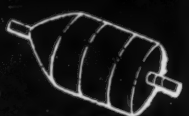
LABORATORY DEVELOPED PACKAGES OFFER SUBSTANTIAL SAVINGS IN MATERIAL, LABOR AND TOTAL SHIPPING COSTS*



CLOCKS, INSTRUMENTS, AND ELECTRONIC COMPONENTS

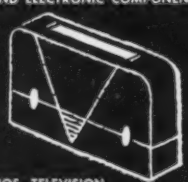


GLASSWARE, SHELVES, FIXTURES, SPECIALTY ITEMS

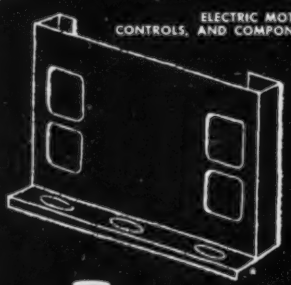


ELECTRIC MOTORS, CONTROLS, AND COMPONENTS

MIRRORS, FRAMED PICTURES, AND OTHER FURNITURE ARTICLES



RADIOS, TELEVISION, AND APPLIANCES

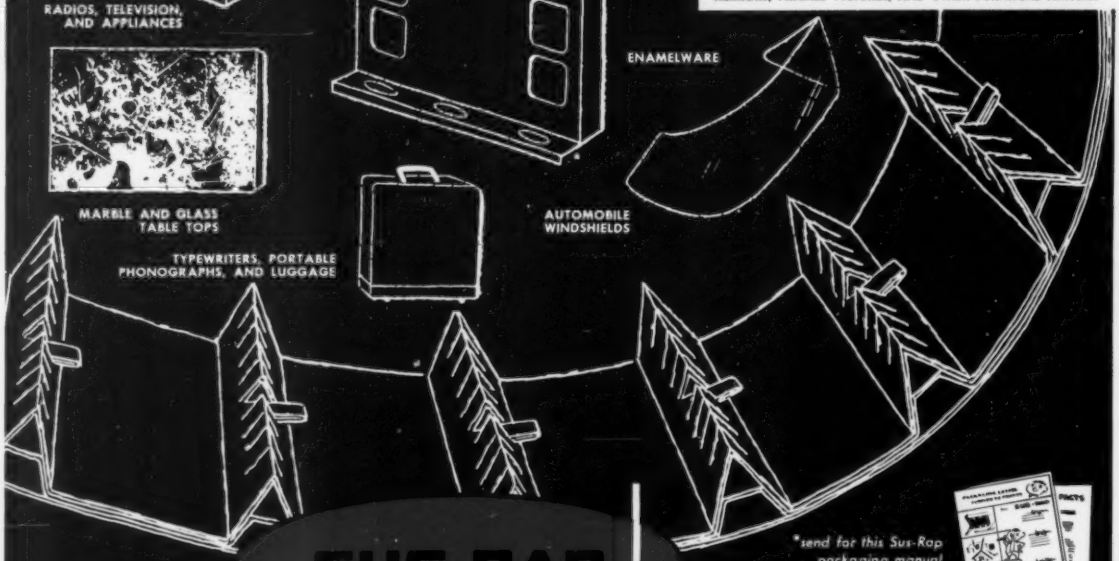


MARBLE AND GLASS TABLE TOPS

TYPEWRITERS, PORTABLE PHONOGRAPHS, AND LUGGAGE

ENAMELWARE

AUTOMOBILE WINDSHIELDS



SUS-RAP

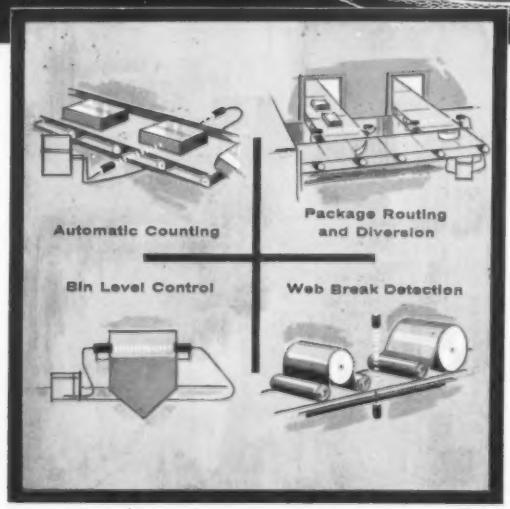
*send for this Sus-Rap packaging manual and Packaging Facts . . . today!

VANANT COMPANY, INC.
955 S. Water St., Milwaukee 4, Wisconsin

Laboratory Developed and Tested Packaging

a new dimension in automated controls

Patents Pending



SONAC ULTRASONIC,

NON-CONTACT SENSING AND SWITCHING SYSTEM

Before Sonac, sensing and switching control systems which involved breaking a beam of energy were limited by vibration, dust, smoke, steam, air contamination and too much or too little light. Sonac's ultrasonic energy "beam" is completely free of these limitations. The acoustic lens on Sonac sensors can actually be painted without affecting performance. Utilizing high frequency sound also means there are no lamps to burn out. Savings in replacement parts and maintenance time often means Sonac pays for itself. Sonac is completely transistorized, providing you with a rugged, dependable electronic circuit.

These are just a few of Sonac's many uses. Optional equipment includes reflectors for precision beam and positioning control, and coupler assemblies for use with flexible tubing for remote sensor locations. This descriptive booklet will be sent to you on request.

DELAVAN
Manufacturing Company
WEST DES MOINES • IOWA

For more information circle No. 219 on Reader Service Card

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MARLEX* approved by all major detergent suppliers

The inherent advantages of lightweight, attractive, and unbreakable plastic containers are unquestioned—more sales appeal, less costly to ship, no breakage, to name a few. Equally unquestioned are the reasons why MARLEX high density blow-molding resins are widely approved for modern detergent containers.

MARLEX blow-molding grades cost no more! Yet, they provide high stress cracking resistance, great rigidity and strength per mil of wall thickness . . . as well as easy processing at high production rates—in short, superb and economical plastic containers.

Today, countless marketers of liquids—starches, bleaches, waxes, shampoos, cough syrups, and the like—are switching to containers made of MARLEX. Our engineers have pioneered the use of high density polyethylene and ethylene copolymers for blow-molded containers. The accumulated knowledge and experience of their work is available to those interested. **MARLEX is a trademark for Phillips family of olefin polymers.*

PHILLIPS CHEMICAL COMPANY, Bartlesville, Oklahoma, a subsidiary of Phillips Petroleum Company

PLASTICS DIVISION OFFICES

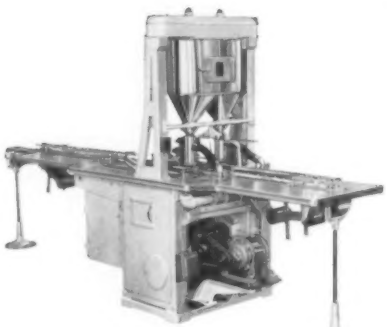
NEW ENGLAND	NEW YORK	AKRON	CHICAGO	WESTERN	SOUTHERN
322 Waterman Avenue	80 Broadway, Suite 4300	318 Water Street	111 S. York Street	317 N. Lake Ave.	6010 Sherry Lane
East Providence 14, R. I.	New York 5, N. Y.	Akron 8, Ohio	Elmhurst, Ill.	Pasadena, Calif.	Dallas 25, Texas
GEneva 4-7600	Digby 4-3484	FRanklin 6-4126	TErrace 4-6600	MUrray 1-6997	EMerson 8-1358

EXPORT: PHILLIPS PETROLEUM INTERNATIONAL CORPORATION • P. O. Box 7239, Panama City, Panama • Sumatrastrasse 27, Zurich 6, Switzerland

PHILLIPS 66 MARLEX PLASTICS

FMC Auger Fillers meet high-quality standards for Chesebrough-Pond's

Chesebrough-Pond's Inc., has long been well-known in the cosmetic industry for products of the highest quality. For many years they have used FMC Auger Fillers to meet the high standards they maintain for their powder and talc products. Ten FMC automatic and semi-automatic fillers of three different types fill a wide variety of sizes and kinds of containers from gold-finished metal canisters to lithographed paperboard drums.



The Duplex Auger Filler model HG-84 is one of the FMC units installed at the Chesebrough-Pond's plant in Clinton, Connecticut. Completely automatic, this model is designed with a choice of filling methods—cam volumetric, gross weighing, or auger combined with vacuum for pack filling dusty products—at speeds up to 70 containers per minute. Many other models are available for large or small plants, automatic or semi-automatic operation, tight or loose fills, long or short runs to handle powders, granules, and certain pastes. Production run accuracy has proved outstanding in filling cans, jars, boxes, bags, etc. from ½ oz. to 20 lb. Changeover for product and size is exceptionally fast and simple. Speeds as high as 140 per minute.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4994 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

For the whole story of how FMC Auger Fillers can improve your packaging, write for Bulletin P-811.

For more information circle No. 221 on Reader Service Card

Circle No. 222 on Card ▶

INTERNATIONAL PAPER—The Ultimate Source

Now, a box with a built-in second color

(More packaging news from International Paper)

New Goldkraft.* An amazing golden packaging board that saves you an entire printing process.

International Paper has developed a new linerboard that cuts the cost of printing shipping containers by eliminating one entire printing process.

This discovery is new Goldkraft, one of International Paper's many rugged, specialty Gator-Hide® kraft linerboards.

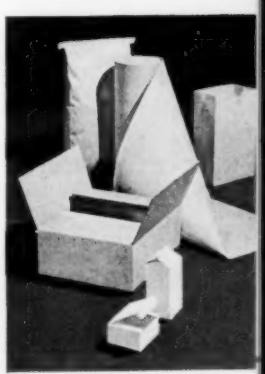
At our Mobile, Alabama research center, a new process has been developed that builds golden color into the board *right on the high-speed papermaking machine*. New Goldkraft will save your company and boxmaker the substantial cost and time of an extra over-all color printing.

Goldkraft is another example of our ability to make strong, attractive and economical packaging papers and boards for industry.

Experimental papermaking processes are in continual development at International Paper's 16 mills and in its research centers. Last year, our staff of 322 package and research counselors answered inquiries at the rate of one every 7 minutes.

International Paper can provide you with the widest range of papers, boards and packaging assistance in the industry. Call us or contact your converter—he's probably been doing business with us for years.

*T.M.



INTERNATIONAL PAPER New York 17, N. Y.

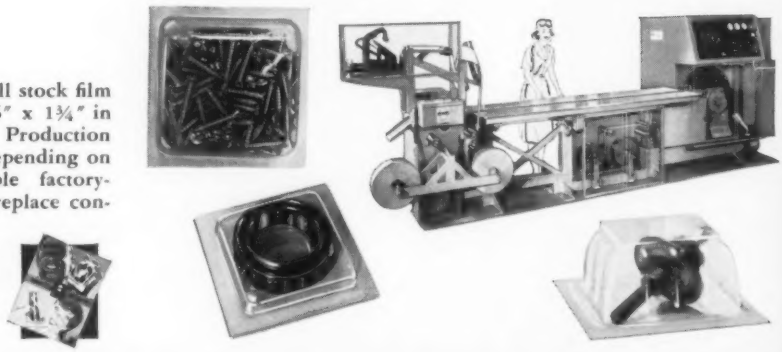
Manufacturers of papers for magazines, books and newspapers • papers for home and office use • converting papers • papers and paperboards for packaging • shipping containers • folding cartons • milk containers • multiwall bags • grocery and specialty bags and sacks • pulps for industry • lumber, plywood and other building materials

Sundstrand Packmasters

...for superior packaging...faster and at lower cost than ever before

NEW MODEL 58

... uses butyrate or acetate roll stock film to form blisters up to 6″ x 6″ x 1¾″ in regular or irregular shapes. Production rates up to 125 per minute, depending on package size. Interchangeable factory-engineered drum assemblies replace conventional die change-overs, insuring perfect, crystal-clear packages. Change-over takes only five minutes. Write for Bulletin 58-1.



NEW MODEL 50A
heat-seals films, foils, or papers

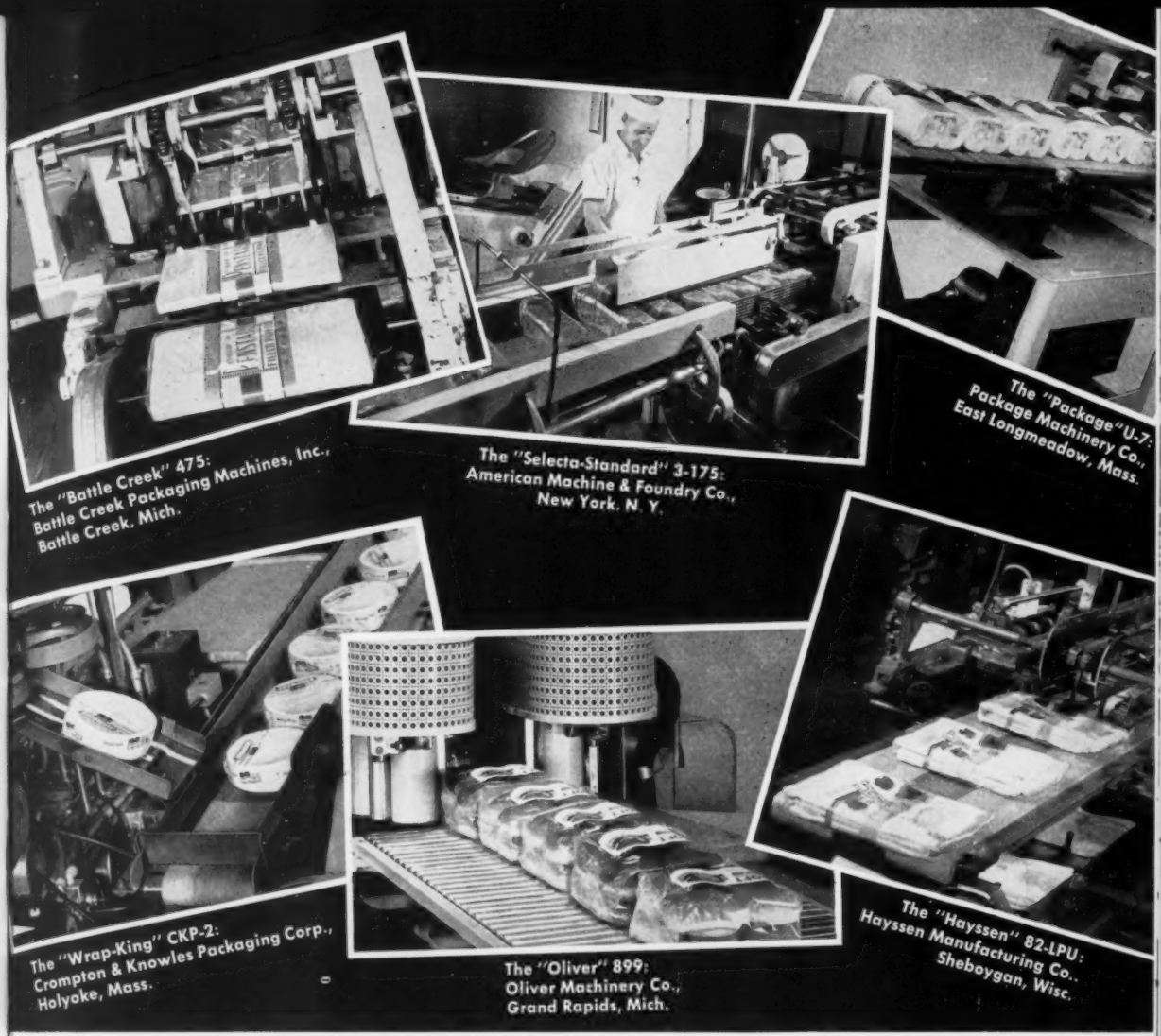
... uses roll stock heat-sealable films, foils, or papers to package hard or soft goods at rates to 150 per minute. Packages may be transparent or opaque both sides, or transparent one side, opaque the other. Sizes 2″ to 8″ wide, 2″ to 16″ long. Change-over takes only 10 to 15 minutes. Exclusive pusher-feeder prevents tearing or piercing of the web, permits use of lighter weight, less expensive materials. Write for Bulletin 50A-1.

MODEL 56
for cohesive papers

Irregular-shaped pieces — moldings, body trim, telephone cases, extrusions, etc. — are wrapped in cohesive paper up to 12″ wide by the Model 56 Packmaster. Automatic cutoff permits running various lengths of products without adjusting machine. Product thickness can vary from ¼″ to 2″. Write for Bulletin 56-1.

MARK OF SUNDSTRAND RELY-ABILITY

SUNDSTRAND AMERICAN BROACH
ANN ARBOR, MICHIGAN
Division of **SUNDSTRAND CORPORATION**



Proved automatic overwrap machines like these can put polyethylene's savings in your product

Take a long look at these six commercially proved automatic polyethylene overwrapping machines. *They can pay for themselves in a year with the money saved using polyethylene instead of conventional transparent film!*

Why? Because the per pound cost of polyethylene film is lower than conventional film. And, you get *more* film per pound.

Film made of BAKELITE polyethylene also provides sales-stimulating sparkle, softness, clarity, and printability. It has long storage life, unique moisture-gas transmission properties, low-temperature toughness, and inertness to most chemicals. It's tops for wrapping stationery, paper towels, napkins, paper plates, handkerchiefs, men's underwear, baked goods, and many, many more large-volume products.

Ask any leading maker of high-speed, automatic polyethylene machines how much his machine can return on an investment geared to your needs. And get our two booklets about automatic polyethylene overwrapping. Write Dept. EV-101, Union Carbide Plastics Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. *In Canada:* Union Carbide Canada Limited, Toronto 12.

UNION CARBIDE

BAKELITE and UNION CARBIDE are registered trade marks of UCC.

Planned Packaging moves merchandise

Sold and still selling!

The corrugated container—workhorse of mass distribution—has long been known for its excellent product protection. Now it's fast becoming the Cinderella of packaging. Attractive, tinted background designs—even four-color half-tone printing, pioneered by Packaging Corporation of America—are transforming drab, rubber-stamped containers into eye-catching traveling billboards that sell their contents at every opportunity.

The skillful combination of art and package design is but one of countless ways in which Packaging Corporation of America's concept of Planned Packaging, implemented through integrated national facilities, produces better packaging . . . more sales. Whether your requirements are large or small, regional or national, we welcome the opportunity to help you.

Packaging Corporation of America

1632 CHICAGO AVENUE, EVANSTON, ILLINOIS

Cartons • Containers • Displays • Egg Packaging Products • Molded Pulp Products • Paperboards

if you can hold it in your hand (and it is reasonably rectangular) • • •

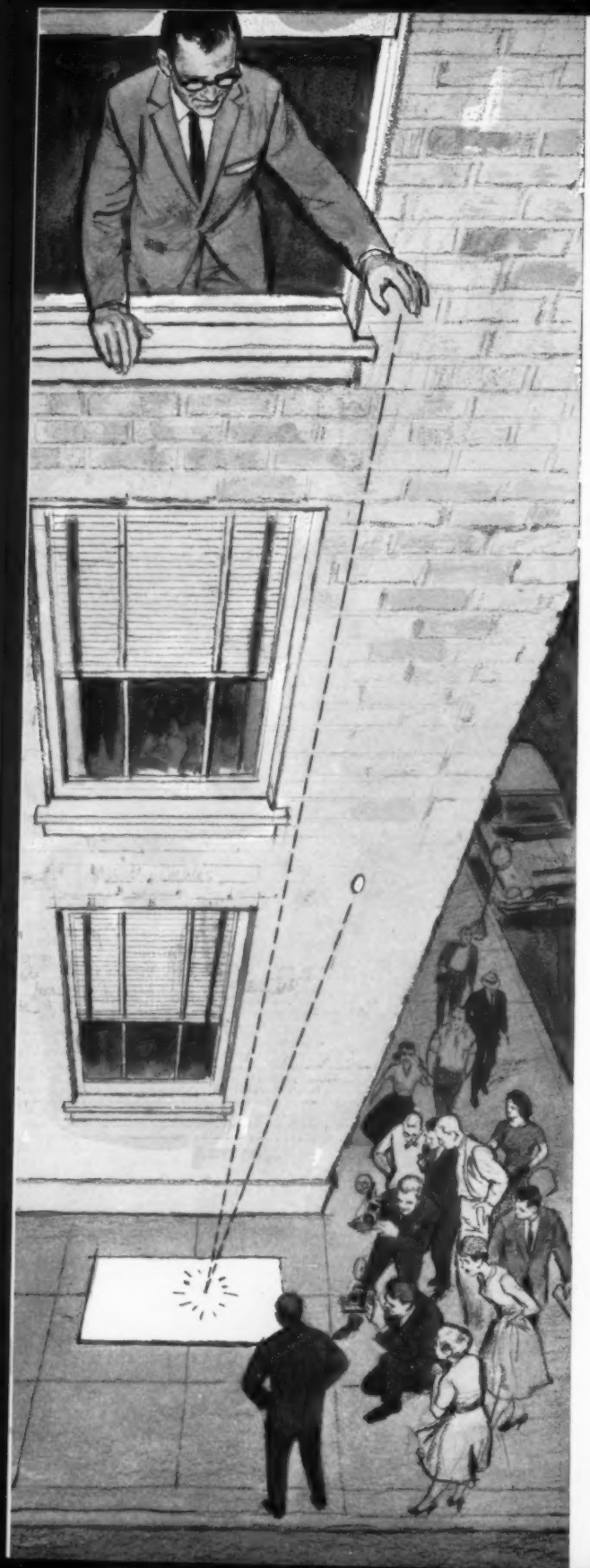
Battle Creek Machines can probably wrap it better,

faster, more economically than any other.

Battle Creek's Model 43M has been specifically engineered to overwrap mass marketed pre-packaged meats such as weiners, sausages and sliced luncheon meats in the "Continuous Flow" tradition of uninterrupted, trouble-free operation. Heat sealing cellophane, printed or unprinted with or without identifying top labels, is drawn tightly around the product and sealed under tension to display meat products at their taste-tempting best. Easily handles items 3" to 10" in length, 2" to 5¼" wide and ½" to 3" high at speeds of 40 to 70 per minute. Investigate the Model 43M today!

Continuous Flow® PACKAGING

BATTLE CREEK *packaging machines, inc.*, BATTLE CREEK, MICH



Egg falls f

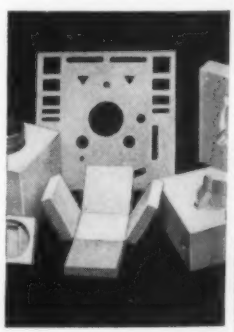
It landed on three- qu

revolutionary new pa

Unscientific — but dramatic!

Dropping an uncooked egg 23 feet is far from being a scientific product test . . . but it is a dramatic way to illustrate new Resilo-Pak's amazing cushioning power.

This newly developed material is composed of millions of tiny polystyrene beads that have been expanded into molded form, and tempered to close tolerances for unidirectional resiliency and flexibility. Inch for inch and dollar for dollar, Armstrong Resilo-Pak is one of the most efficient shock-absorbing cushionings on the market today.



Resilo-Pak can be die-cut, bent, cemented, and scored to form almost any shape. Its thermal conductivity is low, allowing it to be used as a thermal insulator as well as a package cushioning. It is odorless, non-corrosive, non-dusting, and non-abrasive. In addition, product identification and instructions can be printed directly on its pure white surface.

Dynamic cushioning properties of Resilo-Pak

Since it is under dynamic conditions that products are shipped and handled, it is logical to evaluate cushioning materials the same way, re-creating in the laboratory conditions they endure in use.

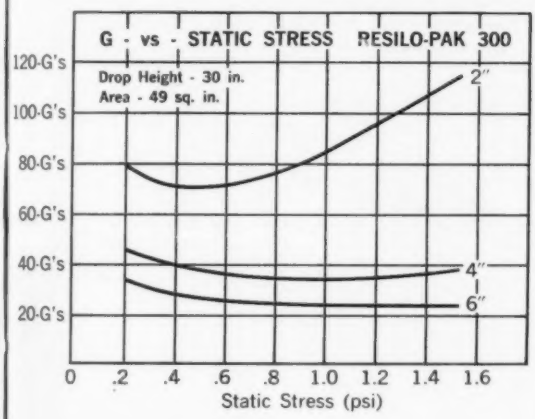
The graph above right shows the protection offered by three different thicknesses of Resilo-Pak 300 at a 30-inch drop height. Note the amazingly uniform G level over a wide unit load (static stress) range.

Continuing evaluation of the dynamic cushioning properties of Resilo-Pak is going on at Armstrong's Research and Development Center. Results show good agreement with *static* test data on Resilo-Pak, which is not the case with many other kinds of cushioning materials.

120-G's
100-G's
80-G's
60-G's
40-G's
20-G's

from 3rd floor . . . and bounces

quarters of an inch of Resilo-Pak, the TRADE-MARK package cushioning from Armstrong

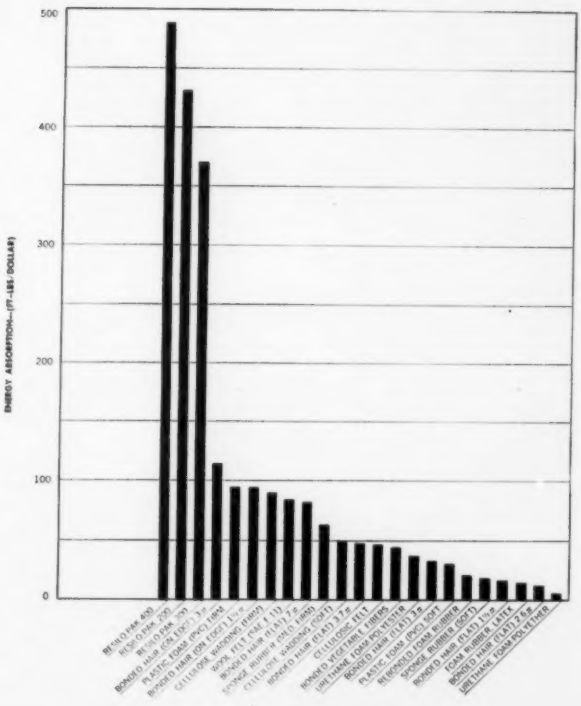


Energy absorption per dollar

Chart at right shows results of static laboratory tests on many commonly used cushioning materials. Resilo-Pak's energy absorption per dollar ranges from three to forty times greater than that of any other cushioning product that was tested. It also has a striking ability to retain its high energy absorption, from – 80°F. to + 165°F.

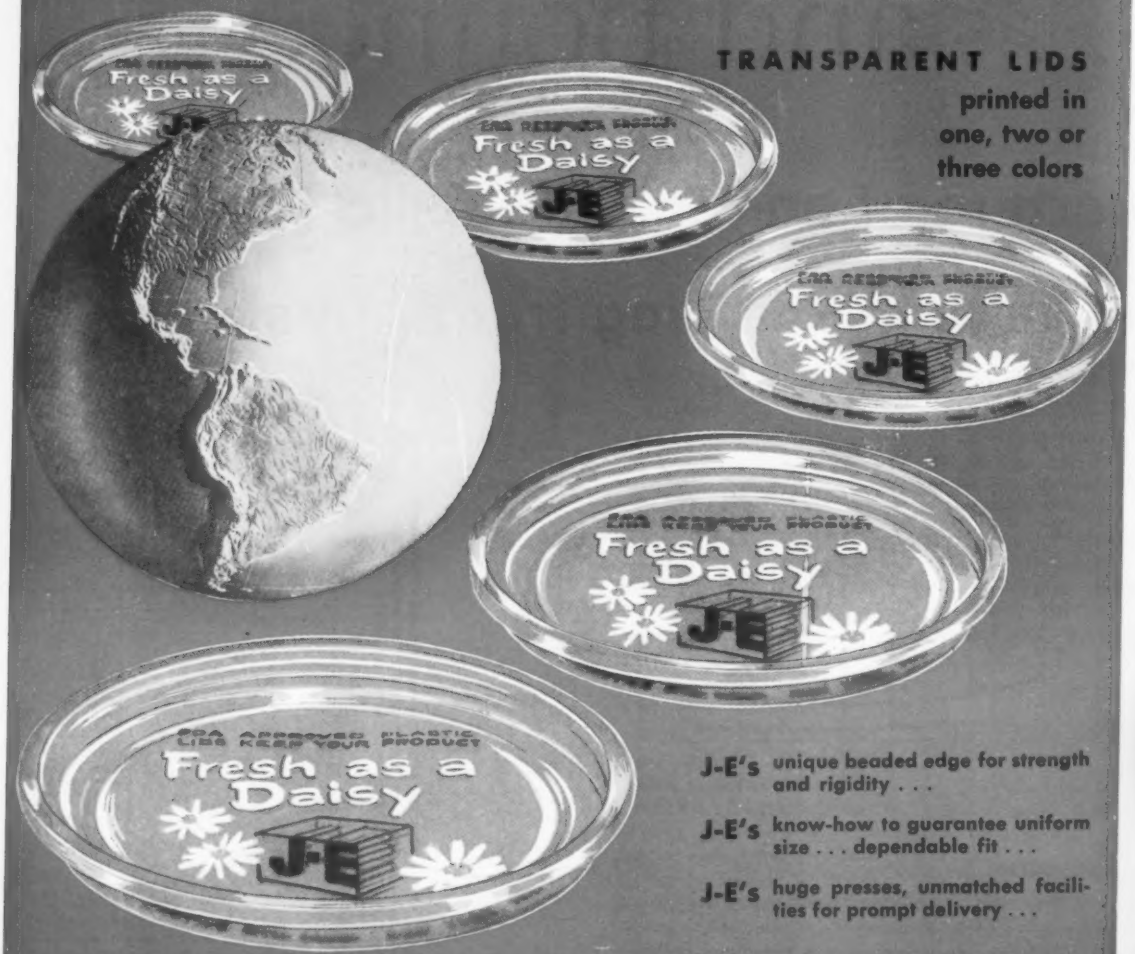
Summarizing Resilo-Pak

Armstrong Resilo-Pak is a new cushioning material that absorbs more energy per dollar than any similar material and maintains its energy-absorbing ability over wide loading and temperature ranges. Its high energy absorption and low density create an opportunity to reduce packaging costs: (1) by reducing the amount and cost of cushioning material, (2) by reducing the size and cost of the package, (3) by reducing cubage and the expense of shipping and warehousing.


500
400
300
200
100
0
ENERGY ABSORPTION—(FT.-LBS. DOLLAR)
RESILO-PAK 450
RESILO-PAK 300
BONDED HAIR (CRUSHED) 1 1/2"
PLASTIC FOAM (PVC) 1 1/2"
BONDED HAIR (FOR FLEXIBILITY) 1 1/2"
CURLED HAIR PADDING (FLAT) 1 1/2"
SPONGE RUBBER (FELT) 1 1/2"
BONDED HAIR (FELT) 1 1/2"
CURLED HAIR PADDING (FLAT) 3"
CURLED HAIR PADDING (FELT) 3"
BONDED VEGETABLE FIBER
BONDED HAIR (FELT) 3"
PLASTIC FOAM (POLYESTER)
BONDED HAIR (FELT) 3"
PLASTIC FOAM (PVC) SOFT
SPONGE RUBBER (FOAM)
BONDED HAIR (FLAT) 1 1/2"
FOAM RUBBER (SOFT)
BONDED HAIR (FLAT) 3"
FOAM RUBBER LATEX
BONDED HAIR (FELT) 3"
LATEX FOAM (SPONGE)
LATEX FOAM (FOAM-IN-TUBE)
LATEX FOAM (FOAM-IN-TUBE)
LATEX FOAM (FOAM-IN-TUB

in the wonderful new world of Plastic Packaging for Fresh and Frozen Foods...

FROM ONE SOURCE...



TRANSPARENT LIDS printed in one, two or three colors

J-E's unique beaded edge for strength and rigidity . . .

J-E's know-how to guarantee uniform size . . . dependable fit . . .

J-E's huge presses, unmatched facilities for prompt delivery . . .

Topping your 8, 10, 12 or 16 ounce container, a J-E lid does wonders . . . food looks and stays fresh as a daisy!

AND FOR A COMPLETE NEW LOOK . . . THE WHOLE PACKAGE . . .

J-E makes the WHOLE package . . . round or rectangular . . . snap-in and snap-on lids . . . or heat sealed closures . . . all transparent, or in a combination of transparent and colored opaque material, printed in one, two or three colors. Can be filled at boiling temperatures and immediately frozen at better than 60° below zero without distortion or cracking . . .

Approved by the Food and Drug Administration

LIDS . . . BASES . . . PRINTING . . . ALL FROM ONE SOURCE!

Why write three purchase orders—one can do the whole job!

J-E PLASTICS MFG. CORP. 400 Nepperhan Ave. • Yonkers, New York • Telephone: GR 6-3456

For more information circle No. 228 on Reader Service Card

Circle No. 229 on Card ►

REDINGTON Automax® Cartoner is *selling itself* with performance!

Here's the most convincing proof you could ask of how remarkably Redington AUTOMAX Cycle Cartoner performs for packagers . . . IT KEEPS SELLING ITSELF! Look at this partial list of companies who have already ordered their second AUTOMAX—and the wide range of products AUTOMAX cartons so efficiently:

★ **CALIFORNIA INK CO.**, San Francisco, California
Paint Products

★ **NUTRILITE PRODUCTS, INC.**, Buena Park, California
Pharmaceuticals

★ **THOS. LEEMING & CO., Inc.**, Parsippany, N.J.
Proprietaries

★ **STANT MFG. CO.**, Connersville, Indiana
Auto Parts

★ **BUCKEYE RIBBON & CARBON CO.**, Cleveland, Ohio
Office Supplies

and **FIVE ROSES TEA AND COFFEE**, Johannesburg, South Africa
have ordered their third!

If you want to speed production and cut costs in packaging Main Products—Supplementary Items—Private Brand Products—Special Sizes—Introductory and Sample Packages—Fill-in-Runs—you can get the same sound answer to your problem with Redington Automax Cycle Cartoner.

★ *Write today for illustrated brochure with detailed data*

F. B. REDINGTON CO.
3022 ST. CHARLES ROAD, BELLWOOD, ILLINOIS • Chicago Phone:—AUstin 7-4200

Verona, N. J.: CEnter 9-4608 ★ Canada: Griswold Engineering, Ltd., Montreal, Que.

IMPORTANT FEATURES of Automax®

LOW PRICE:
Under $5000—ready to run

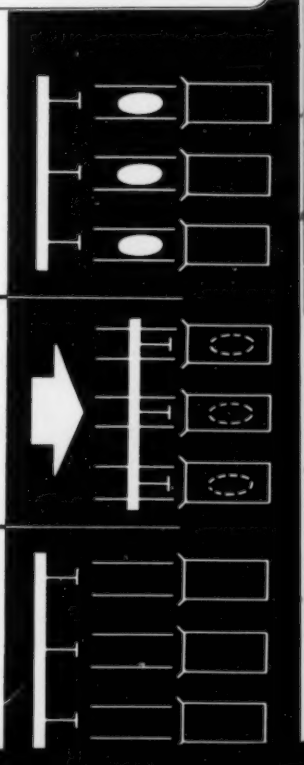
LARGE CARTON RANGE:
Handles cartons
2″ to 7″ long
1″ to 4″ wide
¾″ to 2½″ thick

COMPACT SIZE:
30″ wide, 70″ long—Weight 750 lbs.
Caster mounted for easy mobility.

WHOLE JOB CARTONING:
With one operator, *AUTOMAX* does entire cartoning job automatically . . . no other machine to buy.

. . . and just one operator produces 40-50-60 packages per minute.

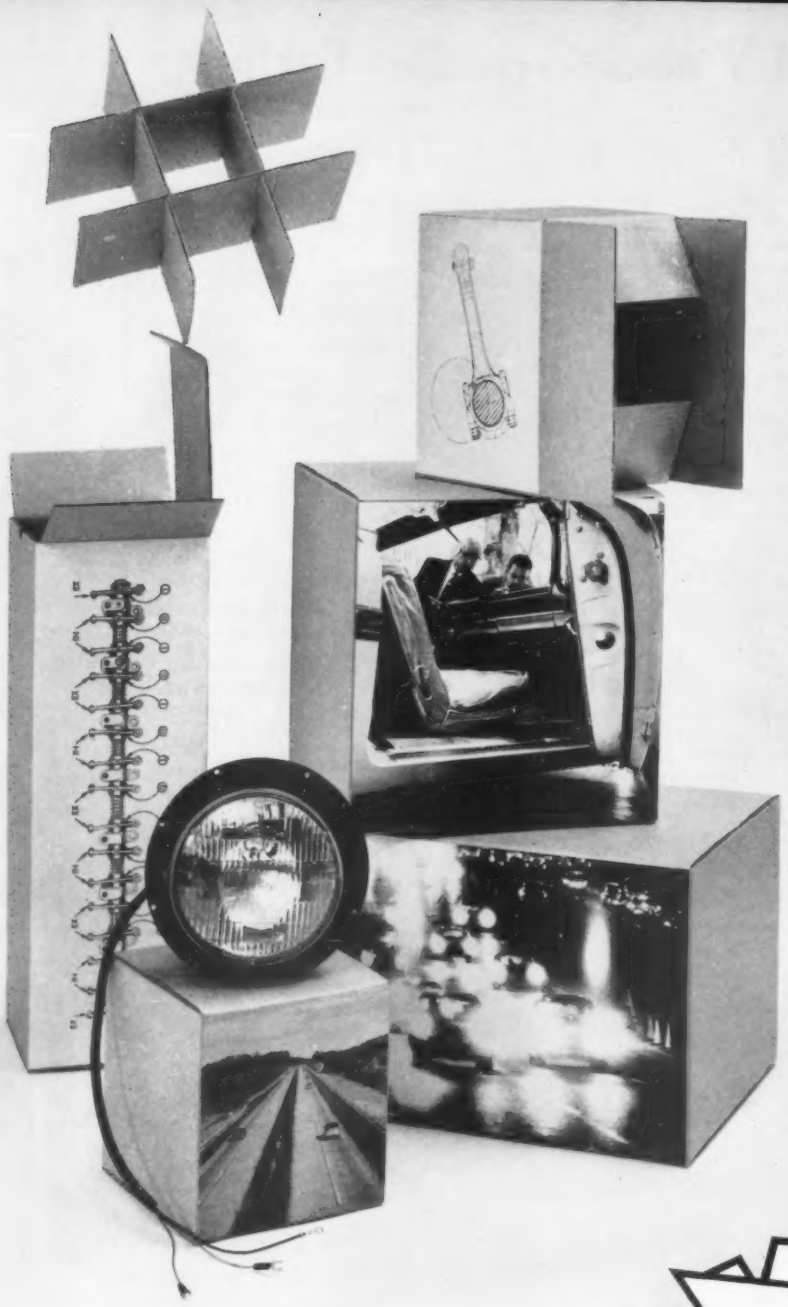
REDINGTON
AUTOMATIC MACHINES for CARTONING
WRAPPING • SPECIAL PACKAGING



1. Operator places articles in each of 3 troughs.

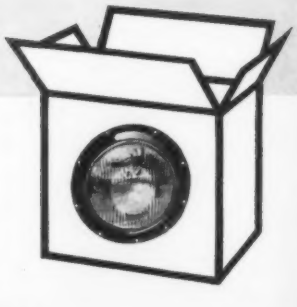
2. Operator pushes loading handle, filling cartons.

3. Operator returns loading handle to original position and 3 more cartons cycle into loading stations.



Miles of automotive products

Millions of shock absorbers, spark plugs, headlights, seat covers; thousands of windshields and grills . . . a bumper-to-bumper crop of automotive products is shipped in Hinde & Dauch Division corrugated boxes. H&D is a major supplier to leading companies in this great industry . . . a reliable source of *boxes in volume at competitive prices.* Call the H&D plant nearest you.



West Virginia Pulp and Paper

Hinde & Dauch Division

17 Plants • 42 Sales Offices • Sandusky, Ohio

Robert Latham joined the order department of The William Carter Company in 1926 and was later transferred to production planning. He served as a mill planner until 1944. At that time, he was transferred to the packaging division. Mr. Latham was appointed manager of the packaging division in 1946 and currently serves in that capacity.

One plant packages production from nine others

By Robert Latham,
Manager, Packaging Division,
The William Carter Company,
Needham Heights, Massachusetts

Maintaining a centralized packaging plant to receive and package the output of nine separate factories affords real opportunities for efficiency by demanding close attention to operating equipment, scheduling methods, and packaging line space. Mr. Latham points out that it takes a combination of these factors to make centralized packaging succeed. The stress he places on having enough working and storage space, and his emphasis on specialized equipment and operating methods, brings into focus the subtleties vital to effective centralized packaging.

Centralized packaging does work if properly planned and organized. This means careful attention to the delicate balancing of six key factors. Keep these in balance and you can take the diversified production from nine different factories and package the entire output in just one plant. We are doing it every day—and in large volume.

If you expect to attain the degree of success we have, you must watch carefully the following six major points:

1. Layout and use of space.
2. Packaging line techniques.
3. Supporting services.
4. Furnishing supplies and materials.
5. Machinery and equipment details.
6. Use of personnel.

To better understand our emphasis on the necessity of balancing these six factors, the complexity of our packaging operation should most certainly be taken into consideration. We have nine factories producing a total of 6,900 different items. These are knitted apparel and other garments in different materials, sizes, styles, kinds, and colors. Bulk quantities of each of these items arrive daily at our centralized packaging plant in Needham Heights.

Since the nature of textile manufacturing dictates that our mills send us these products just as they come from the production lines, it is impracticable for the mills to do very much sorting or classifying. Therefore, we do this in the packaging plant before transferring the items to the packaging lines. Thus, the product to be packaged arrives in bulk quantities and usually in an unsorted condition.

On a typical day, we turn out 16,000 dozen packages of various items. Since we sell directly to retail stores of all sizes and types, our function as a centralized packaging plant permits these stores to order our products from just one source. What happens from the

KEEPING ALL PACKAGING MATERIALS in basement frees packaging line for "packaging only." Lift (one of battery) moves materials to first floor. Two-way public address and intercom lets packagers tell stockmen of needs, permits talking back and forth. Basement has package forming equipment, including imprinting supplies. Centralized packaging demands peak standardization of package components; interchangeability thus cuts material storage space.

ON FIRST FLOOR, table-high lift exit eases transfer of packaging materials (arriving from basement) to various lines. Aisle space behind girl stresses key feature of centralized packaging —adequate working space. There is less storage space for packaging materials than for merchandise to package, so girls on first floor must work closely with stockmen in basement. This ties in with tight scheduling so that imprinted package components are ready when needed.

time we get these products in bulk and ship them out in specified quantities of unit packages is the essence of a centralized method of packaging.

1. LAYOUT AND USE OF SPACE

Proper floor layout, including adequate storage space, bench space, and sorting areas, is an absolute "must" for successful centralized packaging. In addition to having a layout geared to meet the needs of the variable production schedule at any given moment, it is also necessary to have a reserve area for supplies and facilities.

We think the difference between a good job of planning and layout and a mediocre one lies in not making the allotment of space too tight. It is of prime importance not to hem in your packaging areas.

Storage Space Vital

You must also have enough space for warehousing and storage of materials, both before and after packaging. We find that enough storage space is just as important for the handling of finished packages prior to shipment as it is for the sorting and preparation of bulk items prior to their assignment to packaging lines.

2. OPERATING TECHNIQUES

But, having enough floor space and storage area is not enough. You must develop the proper operating techniques to make use of these areas and facilities. An important technique is being able to change bin requirements as needed in order to assure flexibility of valuable storage space. Being able to change a layout from time to time is also necessary. Techniques *must* be sufficiently flexible to keep up with changing needs.

We are constantly making industrial engineering studies of our techniques. One of our reasons for doing this is because we must often make compromises on our operating procedures. For example, we cannot always have a straight line. Short distances in plant areas

frequently pose a problem. For this reason, we try to be alert to having our operating methods responsive to requirements of efficiency.

Proper Equipment

Significant mechanical techniques include the ability to seal polyethylene bags at high speeds and to apply price-marked labels to packages at the same speeds. As noted later in connection with machinery, we have not only sealing equipment, but also imprinter-dispensers and bag fillers.

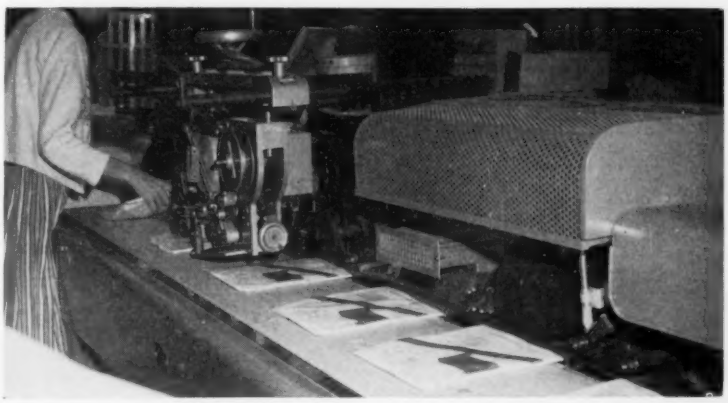
Other techniques calling for special equipment include the use of table-high trucks to move materials around the plant with full flexibility. In addition, a battery of lifts incorporate a public-address and intercom system. This facilitates rapid transfer of packaging materials from the basement to the packaging line floor.

3. SUPPORTING SERVICES

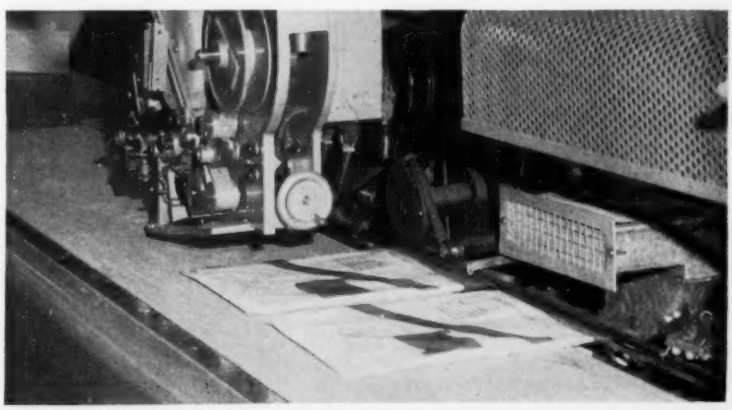
The best of layout and working techniques fall short of effectiveness in centralized packaging unless you also have good supporting services, including carefully worked out scheduling and coordinating. One of the hardest parts of our job is the scheduling and controlling of packaging line production. Some runs are very long while others are quite short. We must have both long- and short-term schedules. For example, basic production requires six months advanced planning to keep a steady flow of production going through at a regular rate. We have to do all this in the face of changeover and with the special problems of seasonal lines of merchandise.

We try to have a standardized schedule for the staple items. We must dovetail in—on a planned program basis—however, the scheduling and coordinating of special items. Since we try to have duplicate equipment (to the extent of at least one unit above that required for a particular line), we have a "spare tire" to put in wherever needed. *(Turn page)*

SEMI-AUTOMATIC BAG LOADING DEVICE uses jet of air to open polyethylene bag. Girl manually inserts garment in opened bag, drops loaded bag to moving conveyor—all in one sweeping action. Each line has three such devices; each girl averages about 20 bags/min. Loaded bags (foreground) are ready for closing; merchandise (background) is ready to package.



FILLED BAGS move (right to left) through sealing unit to labeler. Infeed belts smooth bags for steel holding bands which pull polyethylene snugly around product to make contour package. As bag passes over heated nichrome wire, polyethylene, moving away from heat in two directions (toward holding band and toward surplus cut-off), in effect, runs back over itself toward steel holding bands. These stop flow, form weld of polyethylene thicker than bag itself.



ROLL-FED, PRESSURE-SENSITIVE LABELS or price tickets are imprinted, indexed for position and move onto bags passing through machine from right to left. Contact of bag passing under trigger activates labeler. Carter's use of more than 700 different style imprints insures substantial savings from in-line imprinting of labels. Meanwhile, sealing machine has trimmed off excess portion of polyethylene bag (outside seal), and small blower blows it to scrap box. Typical lines operate at 60 bags/min. Variable speed drive regulates conveyor speed.

OUTGOING BOXES holding completed individual packages represent final step on Carter packaging floor. Experienced floor ladies train girls in accord with plant system, help them develop skills and supervise their working methods. Centralized packaging demands frequent inspection so that all hands are alert to avoid errors of identification or printing. Once completed and ready for shipment, packages move to warehouse area occupying two floors of plant.

Meeting Fluctuations

But more critical from the standpoint of scheduling is the adding or transferring of people on the packaging lines. We develop our crew assignments strictly according to scheduled needs. Therefore, any revising of schedules, even at the last minute, dictates a shifting of people within the operation.

We refine our staple-item schedules to a point of turning these products out on a weekly basis, but even so, there is apt to be some disruption. Conditions are constantly changing in our area of merchandising and we must frequently adjust schedules without notice. The knack of this is to meet the fluctuating requirements of special items without impairing the plant's ability to turn out packages of standard items.

4. FURNISHING MATERIALS

As suggested by our use of lifts, an important feature of centralized packaging is the effective delivering of packaging materials and supplies to the lines as needed. We use a large part of our plant basement for the storage of packaging materials and maintain a certain minimum at all times. We replenish inventories selectively—when and where the need is greatest. We order box blanks on an expected daily-usage basis, but purchase bags and labels according to schedule. We do some fabricating of bags within our own plant but buy our labels from outside sources.

Lines Call For Supplies

Part of our practices on the use of packaging materials rests on interchangeability. For example, individual box tops are interchangeable for many items. Use of imprinting equipment makes this possible and avoids having to inventory quantities of specific box tops to meet the sometimes unpredictable needs.

The intercom is extremely valuable in letting packaging line people keep the stock handlers in the basement apprised of needs so that the right amount is delivered. While we have plenty of storage space, we do not have such excess amounts as to warrant large stockpiles of packaging materials in advance of use. Therefore, coordinated transfer from the basement to the lines is important.

5. MACHINERY DETAILS

Our packaging lines are equipped with a battery of Carbert polyethylene bag sealers. These sealers are equipped with the maker's imprinting and labeling device to put a pressure-sensitive label on each package at the time of heat sealing and closing.

We have two full-time mechanics and, among other activities, they spend an extra hour each day (after the end of the shift) taking care of equipment, changing sealing wires, and the like. Incidentally, they change heat-sealing wires anywhere from one-day to three-week intervals. On many units the wires are changed every day.

Heat sealing is no special problem, but the units cannot run at too high a temperature or the wire will melt and break. The scrap packaging material is salvaged as it is worth five cents a pound, unbaled.

Having reserve units of equipment provides a backstop in case one unit breaks down. The plant layout is sufficiently flexible so that equipment can be moved about with ease, and taking out one unit to put in another is a relatively simple job.

6. USE OF PERSONNEL

You cannot operate a centralized packaging plant without careful training and coordination of your personnel. An inefficient worker can bog down an operation even though the machine paces the line.

We try to establish work-motion patterns and plan the work so that an operator makes as few moves as possible. We do our own engineering of these manual movements and, from time to time, have outside engineers check on our effectiveness. We make this industrial engineering check to be more sure of the efficiency of our work methods.

Checking On Methods

We have an assistant manager and three supervisors, as well as three floor ladies who do the bulk of the training of packaging line workers. The floor ladies, for the most part, have had considerable experience in packaging and know the best methods to use for cer-

What it takes to centralize packaging:

1. Ability to make long runs.
2. Developing and refining packaging and labeling equipment.
3. Training people to operate a centralized packaging plant.
4. Supplying packaging materials when and where they are needed.
5. Mechanizing transfer of supplies and materials between floors.
6. Providing adequate flexibility.
7. Having enough space for warehousing as well as operations.

tain items or packages on our lines. After they establish the working patterns, the trained girls on that particular unit teach any new girls assigned to it. Thereafter, supervision by the floor lady assures uniformity of training and packaging method performance.

We have two to three inspectors who check on the accuracy of identification on the different packages. Also, the operator at a printing unit checks on printed material before it leaves her area. Stockroom boys, too, look for errors of identification or printing. We have conditioned our people to be very alert to improper identification because we have so many different items with different sizes, styles, colors, and so on.

We are keenly aware of the importance of conditioning the personnel to work at top efficiency in our sort of operation. Absenteeism is a real source of difficulty when you are trying to figure a closely scheduled set of packaging line runs. If you are going to do an intricate and tightly controlled job of scheduling short or diversified runs, you have to be sure your personnel program is such that your absenteeism is at a minimum.

The number of individuals assigned to each crew must coordinate very closely with the schedule. All this is based on schooling our people in the knack of operating our type of equipment and under the flexible conditions we need.

Getting A Balance

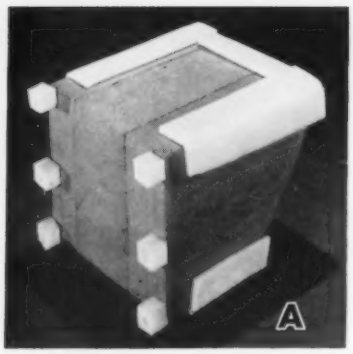
Balancing these elements and tying them together means that any centralized packaging operation depends on the ability to: (1) separate your work into long runs; (2) develop equipment to handle packages; (3) train people to operate your equipment; (4) supply packaging materials and product items as needed; (5) have a method of transferring materials from the basement to the line by special lifts; (6) provide enough flexibility to handle different sizes, styles, colors, and so on; (7) interchange operations around the line; and (8) have enough space for work areas and warehousing.

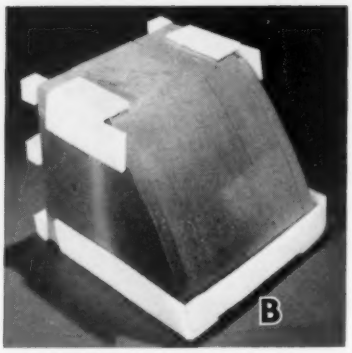
Incidentally, we assign two full floors to warehousing and have 160 ft. of shipping dock. You cannot centralize your packaging without providing enough space—trying to cut down on *necessary* space will destroy the effectiveness of your operation. In spite of our emphasis on employees and their development, we recognize there is a long-range trend to automation.

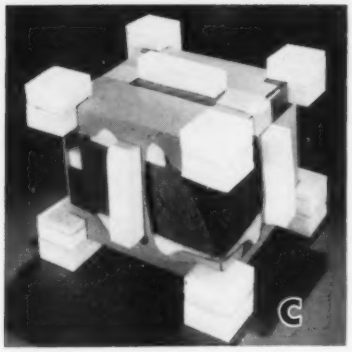
Expect More Mechanization

We expect greater automation in the handling of finished packages once they leave our packaging lines. We think there is going to be more automation in order picking. We are going to need more, not less, space to accommodate the diverse items to be packaged. Even now, we have streamlined our operation to a point that merchandise frequently comes in and goes out the same day—having arrived in bulk quantities from a manufacturing plant and having left as finished packages sorted into groups of particular items. *(End)*

MASS OF TEXTILE PRODUCTION awaiting classification and packaging shows use of adequate floor space. Those who refined Carter's system to its present state of efficiency say there has to be enough storage space for handling of finished packages prior to shipment as well as enough space for sorting and preparation of bulk loads prior to their transfer to packaging lines. Because plants producing these items cannot do their own sorting of merchandise, centralized packaging plant does it. Careful scheduling assures best use of floor space.







REDESIGN RESULT: drastic cut in shipping cost

By Alan S. Marsden,
Packaging Engineer,
Boeing Airplane Company, Seattle

To avoid a prohibitive shipping cost of over $900 a unit, Boeing sought a cheaper package for a missile component —ending up with one that could be shipped for $99.80 by air parcel post. But, subtracting the component weight from the maximum air parcel post weight left just 6.5 pounds for the package itself. Mr. Marsden describes the various alternatives and how, through compression testing, polyethylene foam was chosen as the only cushioning material that could give the protection needed and keep the package within the weight limit. Why air parcel post? For the security needed in shipping a missile component.

The value of a container alone is often greatly underrated in minimizing shipping costs. Some time ago, our company had to ship 63.5-lb. missile components to an Air Force installation. Due to security regulations at that time, shipping the $14,000 units in the originally planned containers meant a courier would have to accompany each unit to its destination and return the replaced unit to Boeing.

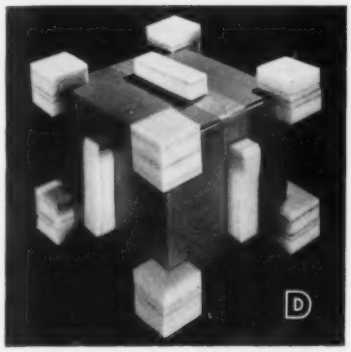
The cost to ship each unit to destination via courier would have been over $900 for one round trip. Faced with this potential expenditure, we started investigating alternate methods of shipment. In so doing, we learned that registered air parcel post would provide the necessary security protection required for the units. The cost of air parcel post registered handling between Boeing and the using facility would be $99.80—a saving of about $800 per round trip.

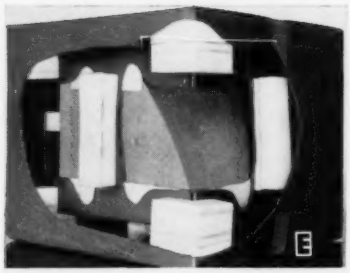
Face Weight Limit

Since the size of the part was within the requirements of air parcel post regulations, the problem of weight was the prime factor to consider. The item weighs 63.5 lb. and the air parcel post weight limitation is 70 lb. This limitation left a balance of 6.5 lb. for packaging the item. This item is limited to a 10-G maximum shock input.

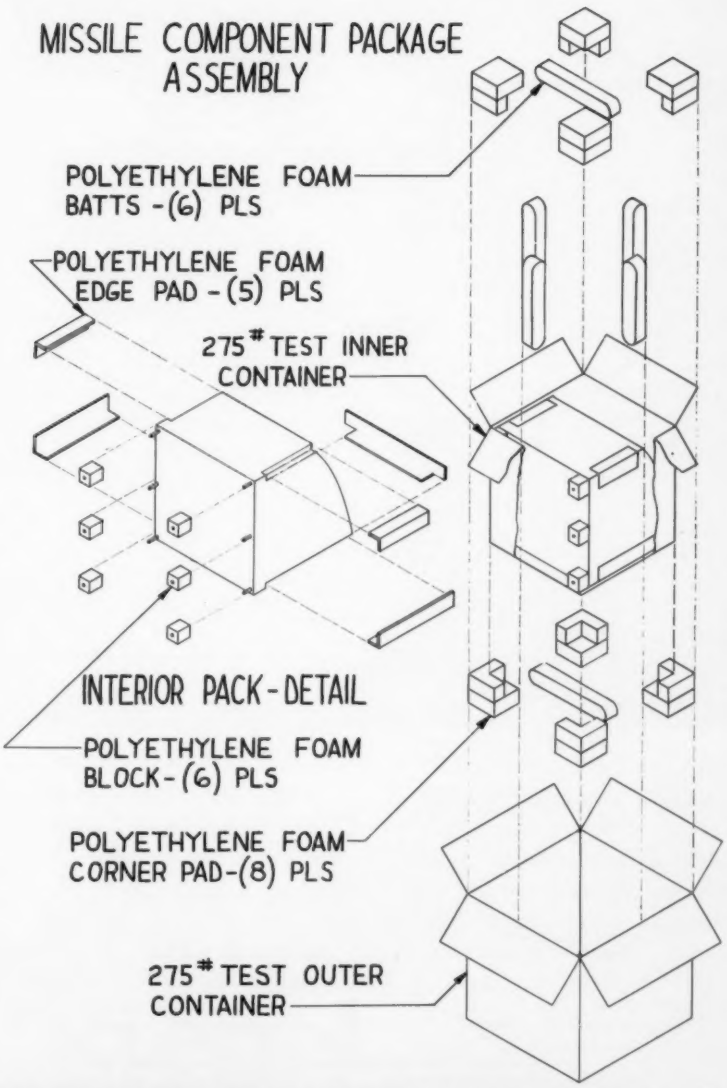
Thus, the primary problem to solve was the development of a package complying with all requirements and weighing 6.5 lb. or less. This meant that the weight of the material for container construction received our primary consideration.

We reviewed glass fibers and aluminum as construction materials, but rejected both because the calculated weight exceeded 6.5 lb.





POLYETHYLENE FOAM PADDING of new package: A, back, side, bottom view of simulated part; B, front, side, top of simulated part; C, cutaway view of inner package, corner blocks and intermediate batts, front, top, side; D, inner package, rear and bottom; E, cutaway shows corner blocks, intermediate batts between inner, outer containers.


MISSILE COMPONENT PACKAGE ASSEMBLY
POLYETHYLENE FOAM BATTS - (6) PLS
POLYETHYLENE FOAM EDGE PAD - (5) PLS
275# TEST INNER CONTAINER
INTERIOR PACK - DETAIL
POLYETHYLENE FOAM BLOCK - (6) PLS
POLYETHYLENE FOAM CORNER PAD - (8) PLS
275# TEST OUTER CONTAINER

EXPLODED DIAGRAM OF NEW PACKAGE adopted by Boeing showing sequence of assembly.

Next, a 275-lb.-test corrugated fibreboard container of the required size was made for the part. The weight of this shipping container was 2 lb.

Security regulations require the use of a double container. Since one container weighed 2 lb., we estimated that a second, larger container would weigh approximately 3 lb. So, 5 lb. of the total allotted 6.5 lb. went to container weight. This left 1.5 lb. for the vital protection against shocks incurred through handling and shipping.

Seek Shock Protection

Finding a material or system to provide protection of the missile component to a maximum input of 10 G's and still weighing less than 1.5 lb. became our next task. A shock-mounting system utilizing commercial rubber shock mounts could be constructed that would provide the 10-G protection. How-

ever, the estimated weight of such a system exceeded 5 lb. and, therefore, was disqualified. Next, we considered air suspension systems utilizing inflated rubber or plastic vessels. However, the lightest system of this type weighed 4 lb. and we disqualified it.

The only materials that had not been evaluated were the available foam products. We compared the densities of various foams and selected two for testing—low-density polyurethane and polyethylene. In the absence of equipment capable of determining the exact amount of cushioning ability of the selected foam samples, we determined the amount of foam required by the following process.

How Much Foam To Use?

We estimated that, under a 10-G shock load, the 63.5-lb. part would exert a force of approximately 635 lb. The material selected would of necessity have to support 635 lb. under load.

Our first step in testing the foam was to determine the amount of deflection of the material under a sustained load. A 1-in. cube of polyethylene foam was loaded with weight until fully compressed. A total weight of 28 lb. was necessary to fully compress polyethylene foam 0.75 in. The foam recovered to 90 per cent of its original thickness. This established that the material would theoretically take a permanent set of 0.1 in./cu. in. after maximum loading.

Alan S. Marsden was graduated from Michigan State University with a B.A. in economics. He is also a graduate of the College of Advanced Traffic in Chicago. Before joining Boeing, he was an air transportation officer in the U.S. Air Force, and was with Chrysler Corporation's corporate traffic office. Mr. Marsden is a member of Delta Sigma Pi.

Apply Safety Factor

To prevent the possibility of shock caused by bottoming of the material under load, we determined that the foam should not be loaded to the maximum. To allow a safety margin, a desirable amount of compression of the foam was established at two-thirds of the total compression possible. Since we knew that the foam compressed 0.75 in./cu. in., the desirable compression for safety was arbitrarily established at 0.5 in.

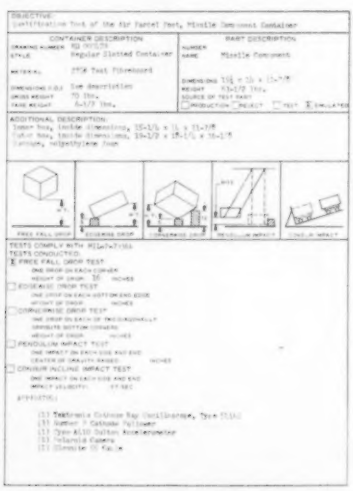
A new 1-in. cube of foam was loaded with weight until a compression of 0.49 in. was noted. The 0.49-in. compression occurred under a 10-lb. weight load. We thus established 10 lb. as the desired weight load per cubic inch of foam under shock compression.

Since each cubic inch of foam supported 10 lb. under compression load and the estimated force of the part under a 10-G load would be 635 lb., the amount of foam required was determined to be 63.5 cu. in.

The same tests were performed on polyurethane foam. This material reached maximum compression under a 2.25-lb./cu.-in. load. Polyurethane foam would not support the part within the allowable 1.5-lb. weight allotted for cushioning material. The weight sufficient to support the item with polyurethane foam would be 2.5 lb.

Placing The Foam

The amount of polyethylene foam required to act on each of the six surfaces of the inner container was established at 63.5 cu.



RESEARCH AND DEVELOPMENT REPORT BOEING

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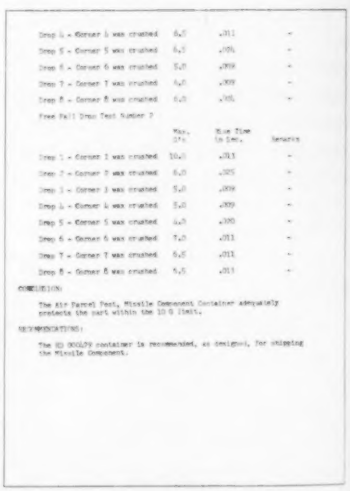
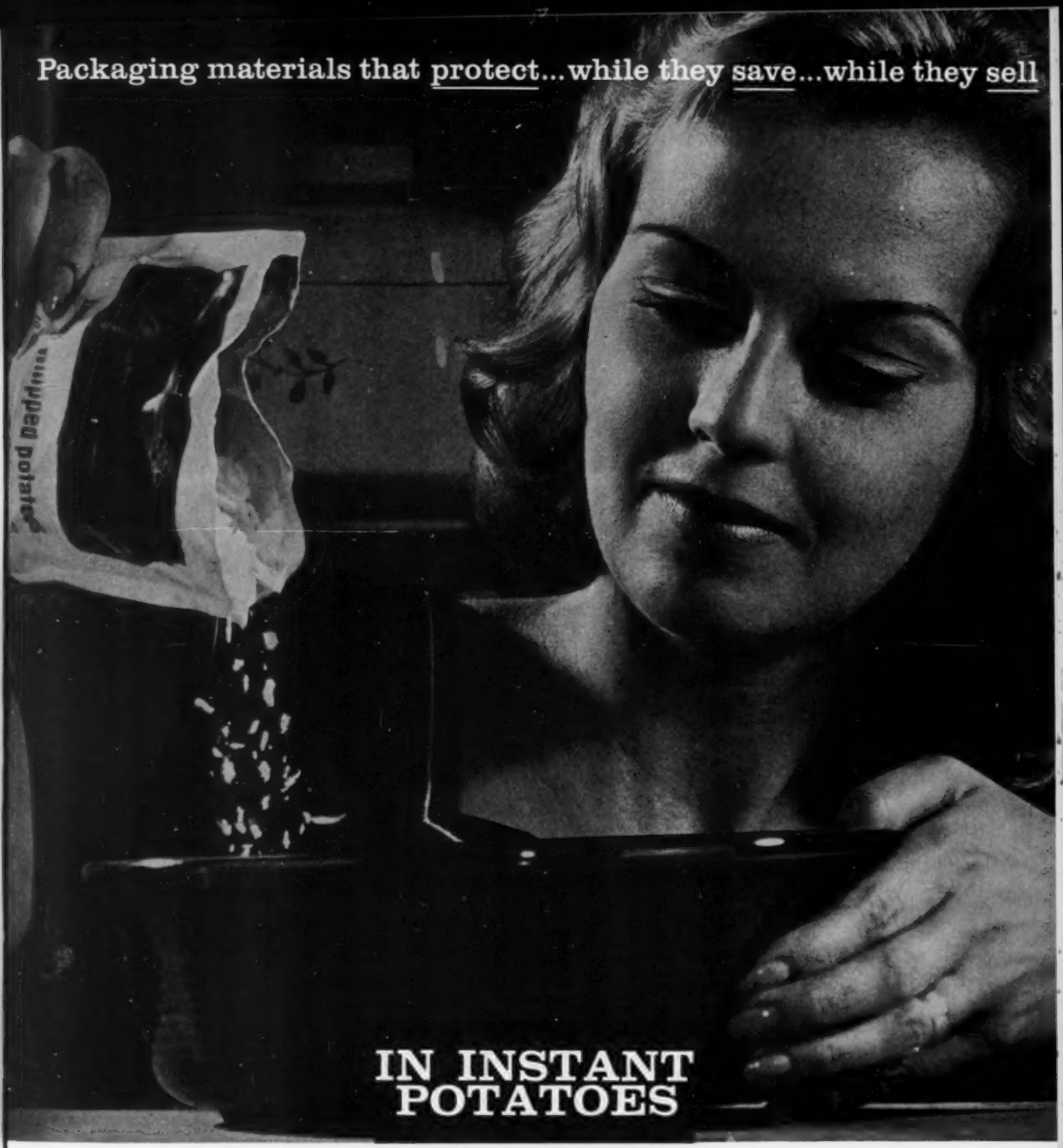


RESEARCH AND DEVELOPMENT REPORT BOEING

REPORT OF QUALITATIVE TEST used by Boeing on redesigned shipping container for missile component is concise, but complete and informative—showing description of container and product, test procedure and apparatus needed, test results, and so on.

Packaging materials that protect...while they save...while they sell



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in. The method of placement of the foam became our next consideration. The largest surface of the part contained 196 sq. in. The polyethylene foam was cut into 2x2x2-in. blocks. Eight blocks, each containing 8 cu. in. of material, were distributed in a pattern over the 196-sq.-in. surface. The problem of retaining the foam in the desired position was solved by gluing the foam between two layers of 175-lb.-test fibreboard, sandwich style.

The combined weight of the inner container, and the six sandwich batts was calculated to be 8.75 lb. which was over the 6.5-lb. limit. Therefore, this method of cushioning had to be eliminated. This sandwich-type cushioning afforded side support only. Since the corner support was also necessary, additional support or redistribution of the polyethylene cushioning material was necessary.

The inner fibreboard container has six sides and eight corners. In the original development of a cushioning system, six sandwich batts, each containing eight 2x2x2-in. polyethylene blocks, were made. The sandwich batt system used one sandwich batt between each side of the inner container and the outer container. Six batts were required to suspend the inner container within the outer container. The system finally adopted uses eight corner blocks and six polyethylene batts centered on the outer surfaces of the inner container.

Use Corner Cushioning

Through experimentation and the knowledge that corner support was necessary, the corner cushion block evolved. The eight 2x2x2-in. blocks, formerly used in the sandwich batt system, were used to form a natural corner block. Eight corner blocks would serve to support the inner container within the outer container providing even spacing was maintained on all sides.

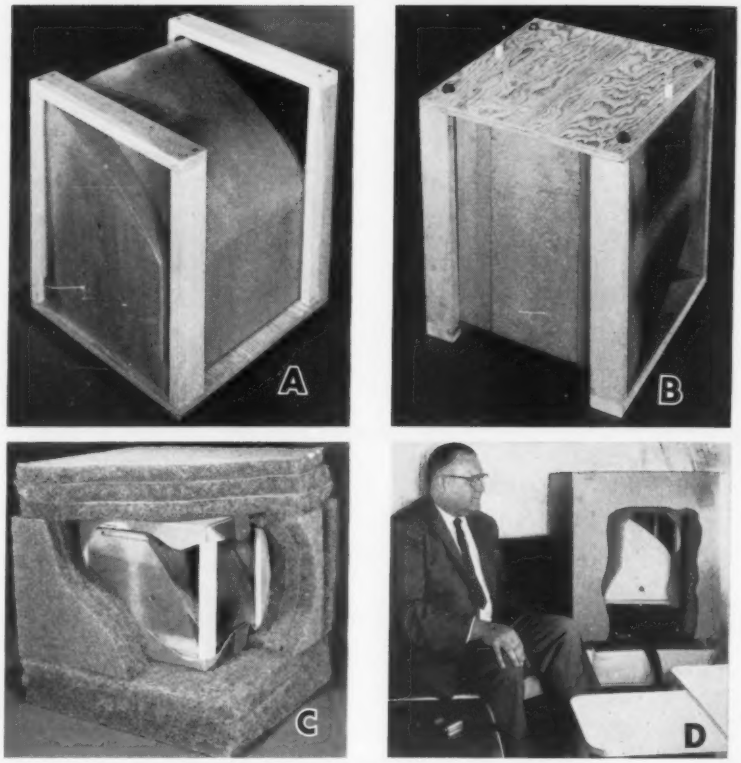
The corner blocks provided cushioning and support to the inner container at the corners. Due to the shape of the part being packaged and the distribution of weight against the inside surface of the inner container, support was necessary *intermediate* to the corner blocks. Polyethylene foam batts were designed to be placed centrally between the four blocks on each side and the top and bottom.

In this configuration, 64 cu. in. of polyethylene foam provide cushioning on each of the six surfaces of the inner container. The 64-in. cubage consists of 32 cu. in. of foam in each intermediate batt and 32 cu. in. combined from each of four corner blocks. Eight cu. in. of foam from each corner block supports the load.

Package Meets Requirements

The total package as described weighs 6.25 lb. A 4-oz. weight allowance is provided for tape, labeling, and shipping documents. We had to prove the container system to qualify the package for shipping. A simulated part was fabricated from plywood and weighted with lead to the exact part weight. The simulated part was subjected to a series of drop tests to provide evidence of the effectiveness of the pack. Four series of drop tests proved that the pack will protect the part against impact shock above 10-G's.

The testing of the package was performed in accordance with Military Specification MIL-P-7936A. The package has been approved by the U.S. Air Force packaging representative at our company. Thus, we met our objective. The package described above performs its required function and is fully compatable with security and air parcel post regulations. *(End)*



PROTECTION USED IN FORMER PACKAGE: A, front, side view of simulated missile component; B, bottom, back and side view; C, cutaway of inner container and hair latex cushioning used between inner and outer containers; D, a Boeing packaging engineer demonstrates courier method required for transportation of missile component using former packaging technique. Redesigned package, smaller and lighter, qualified for registered air parcel post at a saving of approximately $800 per round trip to ship component and return replaced unit.

Objective tests show polyethylene bag can be alternative to overwrapped carton for *individually* frozen fruit and vegetables

Developing new package for frozen fruit, vegetables

By James F. Hesler,
Plastics Division,
Spencer Chemical Company,
Kansas City, Missouri

IQF—"Individual quick-freezing" of fresh fruit and vegetables is a technique that permits freezing of the *individual* fruit or vegetable. This results in the consumer purchasing frozen fruit and vegetables in a free-flowing state—in contrast to block-frozen food.

Accompanying this new quick freezing technique is a new method of packaging. Now, with free-flowing product, we have an alternative package to a boxboard carton overwrapped with printed wax paper: a polyethylene pouch. This suggests decreased packaging costs plus numerous advantages to consumers, food retailers, and frozen food packers.

This new package and freezing technique was developed in Australia and then moved to Canada. From Canada it migrated to packers on our West Coast. In 1958 there was no recorded packaging of frozen fruits and vegetables in polyethylene bags, but as test marketing continued, in 1959 approximately 20,000,000 lb. of these products were packaged in this manner.

Marketing surveys indicate that one West Coast packer alone will package, in 1960, approximately the total of the 1959 production. We hear conservative estimates that over 100,000,000 lb. of frozen fruit and vegetables will be packed in polyethylene bags this year.

Meets Two Requirements

The appeal of this new frozen food packaging technique has been established, and we should examine some of the technical aspects contributing to its growth. Any package, to have a lasting place in industry, must meet these two basic requirements:

1. Functionality. The major prerequisite for any package is its ability to protect the contents safely—from packer to consumer. It must be durable, inexpensive, and yet be attractive to the housewife.

2. Machineability. The package should allow for relatively high production rates and resulting low production costs. If this is combined with low raw material costs, it will offer economic advantages over alternative means of packaging.

Realizing the tremendous market for polyethylene, as well as understanding the packaging requirements stated above, our company embarked on a study of the problems retarding the growth of this package.

Face Key Problems

We took our first step a year and a half ago with a survey of the packers to determine their problems in handling this new pack-

Seeking better polyethylene bags for fruit and vegetables (individually-, not block-frozen), Mr. Hesler's company tackled basic problems of excessive bag damage and lack of high-speed packaging machinery. Resulting "lab" studies revealed the significance of heat seals, package failures and the relationships between seam strength and film thickness. As Mr. Hesler explains, all this led to specific recommendations for film and package spec's, packaging machinery, quality control, and shipping containers.

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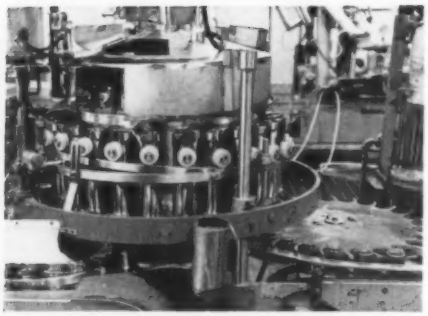
PISTON FILLER'S

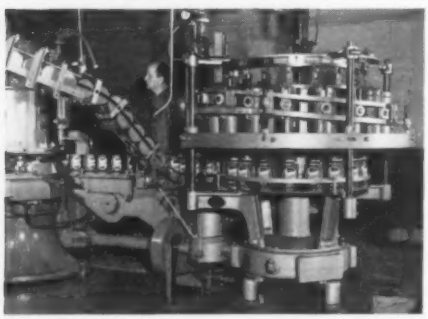
NEW MAGNETIC M
VALVE C

The Magnetic Monitor* Valve Control† on VOTATOR piston fillers consists of a combination of indestructible permanent magnets and the pneumatic lift for positioning the valves. This assembly, with only two moving sections, provides:



Courtesy Gerber Products Co.

New, higher standards of packaging economy are being realized by processors of a wide variety of products. VOTATOR Piston Fillers give close-tolerance filling of liquids and viscous materials at remarkable speeds. No-container, no-fill controls safeguard against interruption of operation and waste. And, new Magnetic Monitor valve control prevents costly damage and downtime.



Courtesy Castrol Oils, Inc.

a. Positive no-container, no-fill operation.

b. The elimination of every possibility of a valve jam due to over-sized particles in the product or the malfunction of any associated equipment.

c. A completely smooth valve action to eliminate all splashing of product.

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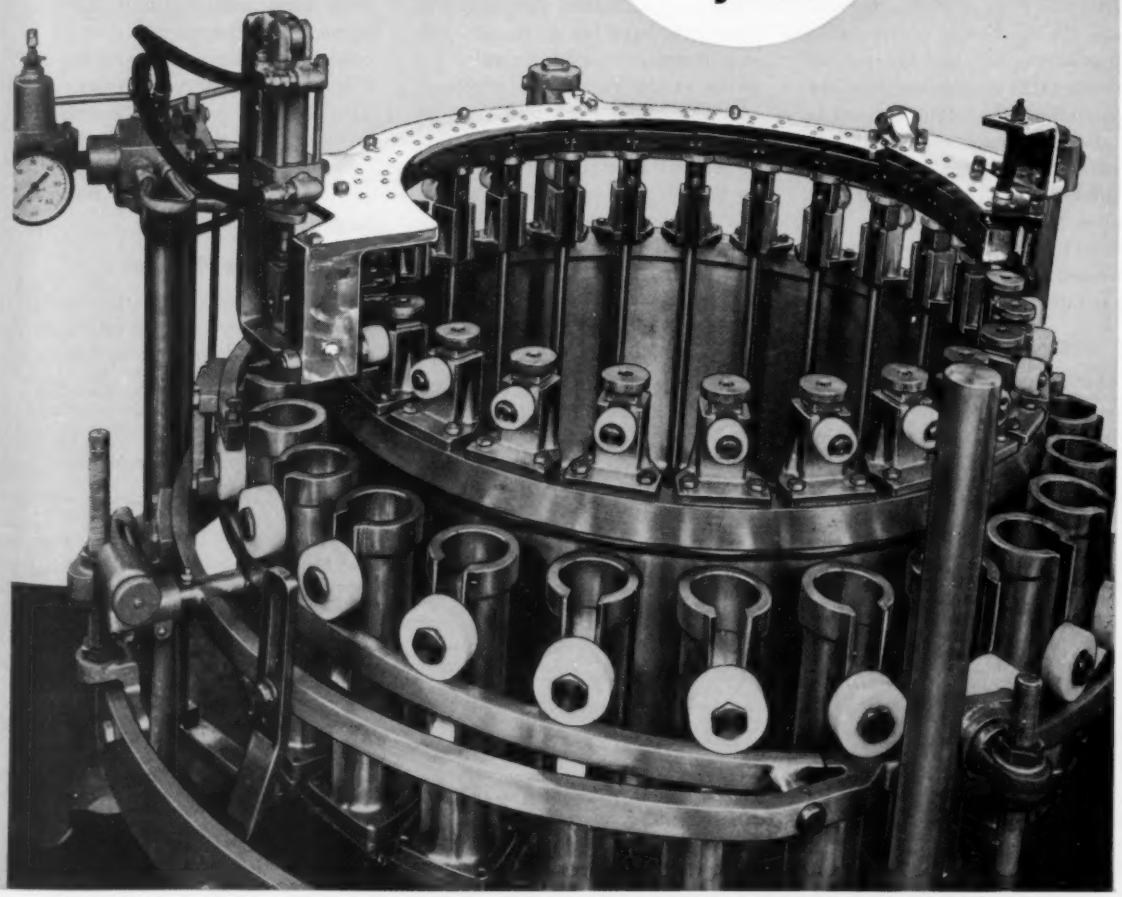
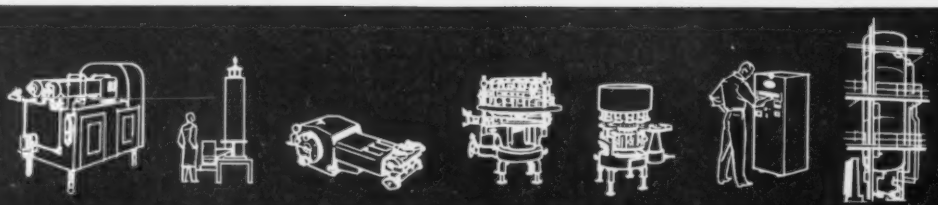


*Trademark

†Patent pending



VOTATOR CONTINUOUS PROCESSING EQUIPMENT FOR CHEMICAL & FOOD INDUSTRIES • VOTATOR PISTON & GRAVITY FILLERS • VOTATOR PLANTS FOR FATTY OILS INDUSTRY • THERMEX DIELECTRIC HEATING EQUIPMENT

age. This survey established two principal problems associated with the industry:

1. Excessive bag damage during shipment and display,
2. Lack of high-speed machinery for packaging.

We queried the major machinery manufacturers for the industry about their plans for machinery modifications. Basically, the difficulties were the inability to wash down the machinery at the end of a production day, and low production rates that were preventing low-cost, volume operation. Results indicated that machinery having the wash-down features would soon be available, and, in addition, machines in design stages were expected to reach speeds in the neighborhood of 50 to 60 bags/min. for each filling head.

Order Lab Studies

Our next decision was to retain Container Laboratories, Inc. for a program to test various polyethylene films for this application. This work was to include the actual packaging operation, shipping, and simulated handling tests. We felt this program would provide answers to the two major problems and shed light on other areas of less critical difficulty. Using a wide variety of films at various thickness levels packaged on actual production equipment, we felt we could determine the cause of excessive bag breakage and master the problems associated with the packaging machinery.

Six widely different films were compared, using various thickness levels ranging from 0.0015 to 0.003 in. Three of these films, at all four thickness levels, were produced by the chill cast method. The other three were manufactured by the blown film technique.

Working under the supervision of a testing laboratory engineer, an independent packer, Shoreland Freezers, used these films to package frozen peas and cut green beans in 2- and 1¾-lb. bags respectively.

Filling Of Bags

Realizing that this market could grow only by using automatic equipment, and noting, too, that the requirements of the semi-automatic pre-formed bag would be satisfied, we decided to test the films on a form-and-fill package machine.

James F. Hesler is a graduate of University of Michigan with a B.S. in mechanical engineering and has since done graduate work in chemical engineering. Before joining Spencer, he was engaged in turbine test work for General Electric, was district manager for an engineering sales company, and superintendent of an ammonia plant. Prior to his present assignment at Spencer in market development for packaging, Mr. Hesler was in project engineering and production manager of a subsidiary plastic manufacturing company.

TABLE I

Results Of Tests On Polyethylene Bags Containing 2 Lb. Frozen Peas

Lot	Thickness (in.)	Damage In Shipment (%)	Vibration Damage (%)			Drop Test Damage (%)*									Greatest Failure (%)		
						After Drop From Height (in.) Indicated											
			End Seams	Center Seam	Other Tears	18	24	30	36	42	48	54	60	Intact	End Seams	Center Seam	Other Tears
A	0.0015	4.2	10.9	0	0	50	10	20	0	20	--	--	--	0	10	60	30
	†0.002	8.3	54.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	0.0025	5.6	12.0	0	0	20	0	0	0	0	0	30	30	20	20	50	10
	0.003	4.2	10.9	10.9	0	10	10	30	10	30	0	0	0	10	40	40	10
B	†0.0015																
	0.002	29.2	23.5	0	0	60	10	10	10	0	0	0	10	0	40	60	0
	†0.0025																
	0.003	12.5	33.3	9.5	0	40	30	10	10	10	--	--	--	0	30	70	0
C	0.0015	4.2	15.2	2.2	0	80	20	--	--	--	--	--	--	0	20	70	10
	0.002	14.6	70.7	0	0	70	30	--	--	--	--	--	--	0	90	10	0
	†0.0025																
	0.003	2.1	0	0	0	0	0	0	0	30	30	20	0	20	80	0	0
D	†0.0015																
	0.002	0	2.1	2.1	0	20	10	20	40	10	--	--	--	0	20	40	40
	0.0025	2.1	0	0	0	20	10	20	30	0	10	0	10	0	10	40	50
	0.003	4.2	13.0	0	0	0	20	0	30	30	10	0	0	10	40	50	0
E	0.0015	6.3	15.5	31.1	0	80	10	0	10	--	--	--	--	0	20	60	20
	0.002	10.4	62.8	13.9	0	100	--	--	--	--	--	--	--	0	50	40	10
	0.0025	8.3	15.9	0	0	80	20	--	--	--	--	--	--	0	100	0	0
	0.003	18.8	35.9	5.1	0	100	--	--	--	--	--	--	--	0	100	0	0
F	0.0015	6.3	31.1	8.9	0	80	20	--	--	--	--	--	--	0	50	20	30
	0.002	10.4	16.3	16.3	0	100	--	--	--	--	--	--	--	0	30	60	10
	0.0025	6.3	20.0	28.9	0	100	--	--	--	--	--	--	--	0	30	50	20
	0.003	28.9	48.6	11.4	0	100	--	--	--	--	--	--	--	0	70	30	0

*Represents bags not damaged after shipping or vibration.
†Insufficient samples to merit true percentage. See Table III.
‡No samples available.

TABLE II

Results Of Tests On Polyethylene Bags Containing 1¾ Lb. Of Frozen Green Beans

Lot	Thickness (in.)	Damage In Shipment (%)	Vibration Damage (%)			Drop Test Damage (%)*									Greatest Failure (%)		
						After Drop From Height (in.) Indicated											
			End Seams	Center Seams	Other Tears	18	24	30	36	42	48	54	60	Intact	End Seams	Center Seam	Other Tears
A	0.0015	14.6	0	20.8	0	20	20	40	10	10	--	--	--	0	0	0	100
	0.002	8.3	0	8.3	0	20	10	10	0	0	0	0	0	100	0	40	0
	0.0025	0	0	0	0	0	0	90	10	--	--	--	--	0	0	40	60
	0.003	0	0	0	0	0	0	0	0	10	10	10	0	70	0	0	30
B	0.0015	0	20.8	20.8	0	14.3	71.4	14.3	--	--	--	--	--	0	0	43	57
	0.002	10.4	32.6	18.6	0	50	20	30	--	--	--	--	--	0	60	40	0
	†0.0025																
	0.003	0	10.4	2.1	0	12.5	0	37.5	12.5	25	12.5	--	--	0	63	12	25
C	0.0015	0	14.6	0	2.1	70	10	10	10	--	--	--	--	0	20	60	20
	0.002	4.2	22.9	0	0	60	20	20	--	--	--	--	--	0	80	10	10
	0.0025	0	6.3	0	0	90	0	10	--	--	--	--	--	0	60	40	0
	0.003	0	2.1	0	0	70	20	10	--	--	--	--	--	0	60	40	0
D	†0.0015																
	0.002	0	22.2	2.2	0	40	30	0	0	20	0	10	--	0	60	0	40
	0.0025	0	19.6	0	0	60	10	10	20	--	--	--	--	0	90	0	10
	0.003	0	10.9	0	2.2	20	0	10	20	20	10	10	10	0	100	0	0
E	0.0015	39.6	84.2	5.3	0	100	--	--	--	--	--	--	--	0	100	0	0
	0.002	61.1	52.9	5.9	0	100	--	--	--	--	--	--	--	0	97	3	0
	0.0025	8.3	4.5	0	0	100	--	--	--	--	--	--	--	0	100	0	0
	0.003	27.1	25.7	0	0	100	--	--	--	--	--	--	--	0	100	0	0
F	0.0015	8.3	0	0	0	50	30	20	--	--	--	--	--	0	20	50	30
	0.002	20.8	26.3	10.5	0	86	14	--	--	--	--	--	--	0	14	86	0
	‡0.0025	22.9	74.3	17.1	8.6	--	--	--	--	--	--	--	--				
	†0.003																

*Represents bags not damaged after shipping or vibration.
†No samples available.
‡All samples damaged in shipping or during vibration.

Packages of peas and cut green beans were filled and packed 12 per shipping container and shipped to a cold storage warehouse. Upon receipt, the shipping containers were opened and the inner polyethylene bags examined. The shipping containers were reloaded with the original contents and were reclosed by means of one strip of 3-in. wide, 600-lb. basis weight gum paper tape. All containers were then stored at approximately –18° to 0°F.

THE TEST CYCLE

1. Tests Of Loaded Bags

The next step after freezer storage was to subject the frozen samples (packed 12 per shipping container) to laboratory tests.

Vibration. Each container was subjected to 15 min. of vibration at 1 + G (on its top, bottom, and two sides) for a total of 1 hr. After each 15-min. period, the containers were returned to the freezer compartment to prevent thawing. At the completion of the test cycle, the containers were opened and their contents inspected.

Drop test. Subsequent to examination after the vibration cycle, the containers were returned to the freezer and removed one at a time in order to conduct drop tests on the polyethylene bags in the following sequence:

1. Flat on the front face of the bag,
2. Flat on the seamed face of the bag,
3. On the bottom seams,
4. On the top seam,
5. On one corner,
6. On the diagonally opposite corner,
7. Flat with the seam face striking the top corner of a chipboard container,
8. Same as No. 7 but striking the top chime of a metal can.

The above cycle of drops was performed from an initial height of 18 in., and the drop cycle was repeated in increasing increments of 6 in. until failure occurred. A split or tear constituted failure and the position of such failure was noted. (See Tables I and II.)

We recognized that any one package of frozen peas or cut green beans would never be subjected to such rigorous handling in actual usage. The above tests were to indicate the relative performance qualities of the six materials.

2. Material Tests

To determine the basic characteristics of the six different polyethylene films, the following sequence of tests was performed on either basic film or empty bags:

a. Water vapor permeability,
b. Seam strength,
c. Softball impact test,
d. Elmendorf tear in both machine direction and transverse direction,
e. Clarity,
f. Per cent haze,
g. Coefficient of friction,
h. Seal voltage.

Results of these tests appear in Table III.

Lest a cursory examination of these test data would appear confusing, we suggest noting three conclusions from a review of the material:

1. Production speed is presently limited by the time necessary to make good heat seals. *(Turn page)*

Still TOPS in M.V.T. PROTECTION

THILCO VAPOTITE

- Keeps moisture-vapor in or out—where wanted . . .
- Is odorless, non-staining, clean, pure and non-toxic . . .
- Preserves food flavors and freshness, longer . . .
- Protects products from tacking, sticking and blocking . . .

TAPE INC. — Packages its gummed roll tape in heavy-duty VAPOTITE bags to protect it from deterioration over extended periods of storage in distributors' warehouses and customer inventory. VAPOTITE'S superior-moisture vapor resistance preserves glue's proper consistency — safeguards against tacking and sticking at temperature extremes. One Tape Inc. customer reports perfect condition Tape even after 6 years of "hidden storage" inventory.

KRAFT FOODS — Gelatin dessert is packaged in a VAPOTITE bag carton liner as the surest way to preserve the product's flavor and freshness and prevent granules from caking. VAPOTITE does not stain or offset, nor does any odor develop from it to permeate the package and damage the naturalness of Kraft's tasty flavors. Because it is sanitary, clean, and non-toxic, VAPOTITE is ideal for packaging food products of many different types.

WILLIAMS CANDY CO. —Of Oklahoma City uses economical VAPOTITE case liners to preserve "factory freshness" of its bulk candies in storage. Hard candies and confections can be produced in "off seasons" and stored for later distribution without danger of sticking and blocking, or loss of sheen due to moisture-vapor penetration. The Williams Co. tested many packaging mediums but found none as effective in M.V.T. protection as VAPOTITE.

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VAPOTITE, as the name implies, is a wax laminated sheet with an exceptionally high M.V.T. rating. It combines two outer plies of closely formed quality kraft, glassine or grease-proof papers, each double-coated and laminated with special blends of microcrystalline waxes. It has packaging strength and pliability which readily permit its conversion into spiral containers, case liners or small unit size bags without damage to wax film M.V.T. resistance. VAPOTITE is *economical, low in cost,* and can be furnished "tailor-made" to specific requirements in color or with eye-appealing print decorating, as desired.

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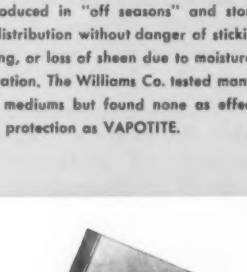

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TABLE III

Results Of Tests To Determine Basic Characteristics Of Six Different Polyethylene Films

Lot	Type: Production Method	Thickness (in.)	Clarity*	Haze (%)	WVTR (gm./100 sq. in./ 24 hr.)	Slip (coefficient of friction)	Impact Strength (drop height in ft.)†	Tear Strength‡ (gm./0.001 in.): Machine Direction	Tear Strength‡ (gm./0.001 in.): Transverse Direction	Seal Voltage¶: Tack	Seal Voltage¶: Burn	Packaging Speed‡ (bags/min.)	Seam Strength (lb./in.): End	Seam Strength (lb./in.): Center
A	Cast	0.0015	4	11.4	2.31	0.11	4	102	101	15	32.5	32	2.286	2.410
		0.002	3	13.8	2.09	0.21	5	84	102	15	35	32	3.238	4.793
		0.0025	1	15.8	1.83	0.13	6	78	93	15	37.5	32	4.714	5.652
		0.003	1	13.5	1.44	0.12	7.25	75	22	15	37.5	32	4.815	6.802
B	Cast	0.0015	0	17.4	1.65	1.00	2.5	149	116	15	32.5	32	4.162	1.692
		0.002	0	12.0	1.15	0.89	3.5	122	137	15	35	20**	3.269	4.176
		0.0025	1	10.9	1.44	1.21	4	95	118	15	37.5	--	--	--
		0.003	0	19.1	0.76	0.69	5	97	129	15	38	20**	4.643	6.370
C	Cast	0.0015	11	3.6	1.27	0.18	2.5	149	171	14	27.5	32	2.484	2.489
		0.002	11	2.9	1.19	0.19	3.25	170	185	15	32.5	32	3.255	5.617
		0.0025	11	2.6	0.56	0.22	3.75	110	165	17	37	32	3.991	6.744
		0.003	10	3.5	1.23	0.20	6.25	117	149	17	40	20**	4.960	7.441
D	Blown	0.0015	10	8.5	1.40	0.81	2	306	81	12.5	30	--	--	--
		0.002	9	9.0	1.58	0.80	3.25	262	160	12.5	30	20**	3.339	5.586
		0.0025	3	8.7	1.11	0.55	3	292	144	12.5	32.5	20**	3.542	6.515
		0.003	8	11.0	0.95	0.35	4	204	155	15	37.5	32	5.515	7.000
E	Blown	0.0015	11	7.0	1.57	0.12	2.50	389	217	15	27.5	20**	2.815	4.573
		0.002	11	8.1	1.20	0.13	3.25	346	302	16	27.5	20**	3.493	6.035
		0.0025	9	9.7	0.36	0.13	4	267	248	17	30	20**	4.696	6.502
		0.003	9	9.8	0.34	0.15	4.25	247	232	17.5	32.5	20**	5.445	8.674
F	Blown	0.0015	11	7.8	1.39	0.19	1.5	425	137	14	32	32	2.357	4.493
		0.002	10	9.2	1.47	0.18	2.5	358	185	15	35	20**	3.692	5.617
		0.0025	9	10.1	0.56	0.19	3.75	209	237	15	38	20**	4.423	6.449
		0.003	11	12.7	0.56	0.17	3.5	270	206	18	38	32	5.075	6.727

*Test used for clarity rating. Stand at a distance from a standard eye test chart at which the smallest line (Line No. 11) can be read easily. In this same position, hold polyethylene in front of eyes and note the smallest line that can be read. The number of this line represents the degree of clarity of the film. Thus, a rating of 11 means complete transparency.

†Softball was dropped on film at room conditions.

‡Elmendorf test.

¶The correct sealing voltage will fall between the amount that tacks the film and the amount that burns it.

‡Maximum speed, 32 bags/min.

**Production speed limited by seal.

2. Package damage occurring during shipment, vibration tests, and drop testing was due almost entirely to failure of the packages at either the end or the center seal.

3. Examination of Table III reveals that for all of the different type films, the seam strength went up markedly as the film thickness increased.

Any other impressions or conclusions are secondary to the foregoing three statements.

Even with limited knowledge of the behavior of polyethylene film, it is easy to understand that the strength of any peel type heat seal can only approach the actual strength of the film itself. As a general statement, this seal strength will range in the vicinity of 80 per cent of the basic film strength. Thus, it is obvious that selection of the proper film type and optimum thickness for the application depends primarily on the ability to obtain the strongest seal possible on available packaging machinery.

Clarity Plus Strength

It is also important for us to remember that at one time in the development of polyethylene film only a relatively hazy film was able to provide real package strength. With improved resin formulation and better film manufacturing techniques, this is no longer the case. There are now high quality films on the market which exhibit good optical properties and relatively high strength.

Let us keep the foregoing conclusions in mind and remember that good optical properties are available with film strength, and also that the seam strength can never equal the strength of the film. This leads to a recommendation for a film for this application:

For 2-lb. packages of IQF frozen foods similar to the peas and cut beans packaged in this study, a film thickness of 0.0025 in. is the optimum value.

This thickness is without question more than that required by considering the film strength alone, but nevertheless it is the minimum necessary to assure adequate seam strength.

FIVE KEY REQUIREMENTS

As proper thickness is now established, we can turn to the overall recommendations necessary for the industry to follow to meet the package requirements of functionality and machineability. Briefly, these recommendations are as follows:

A. Film specification,
B. Package specifications,
C. Machinery recommendations,
D. Packer quality control tests,
E. Adequate shipping containers.

We should next examine these recommendations in detail.

A. Film Specification

The packer today must order film from its converter by exact specification. This is necessary to

make certain of getting quality film—to prevent costly production tie-ups and resulting increased costs. The detailed specifications which follow are designed to obtain maximum sealing strength and also provide a film of sufficient strength and good optical properties.

Note: The test methods specified below are in accordance with Commercial Standard CS 227-59 for polyethylene film (as published by the U.S. Department of Commerce). Listed is the paragraph number with each item specified.

1. Resin—This should be by the supplier's exact number, e.g., Spencer "Poly-Eth" FF-50 or equivalent.
2. Thickness—0.0025 in. ± 5 per cent across the web and throughout the length. (Paragraph 7.3.1)
3. Width—The desired width of film should be specified with a tolerance of +⅛ in.
4. Impact strength—Softball test 3 ft. or dart drop test 115 gm. (Paragraph 7.7.1)
5. Slip—Coefficient of friction not to exceed 0.2. (Paragraph 7.9.1)
6. Clarity—Gloss, minimum 64 with 45° glosshead. (Paragraph 7.10.2)
   Haze, 6 per cent maximum, per ASTM Test D1008-59T. (Paragraph 7.10.3)
7. Static—none.
8. Odor—negligible.
9. Ink adhesion—Printed side, 95 per cent adhesion (pressure-sensitive tape test). Unprinted side, 0 per cent adhesion (pressure-sensitive tape test). (Paragraph 7.11)
10. Heat sealability—(Paragraph 7.11)
    a. Treated to treated, 70 per cent of film strength.
    b. Untreated to treated, 70 per cent of film strength.
    c. Untreated to untreated, 85 per cent of film strength.
11. Roll condition—
    a. Appearance: (1) Uniform with minimum of gauge bands, (2) roll edges free of nicks and cuts, (3) hard end rolls to be avoided.
    b. Splices, overlapped and heat sealed.
    c. Cores, 3 in. i.d., 300 wall heavy-duty type.
    d. Packaging, wrap with corrugated paper or equal protecting cover.
    e. Labeling, clearly indicate the following: (1) gauge, (2) width, (3) resin identification, (4) side treated for printing.

B. Package Specification

In addition to the above film specification, it is equally important to establish minimum requirements for the frozen food bag. These specifications should also include:

1. Minimum seam strength.
2. Maximum allowable air space.

Finding Seal Strength

The seal strength is related to the other film properties by the following formula:

$$\text{Seal strength} = \text{film tensile strength} \times \text{film thickness} \times \text{seal efficiency}$$

where seal strength is pounds per inch; film tensile strength, pounds per square inch; film thickness, inches; seal efficiency, percentage expressed in decimals.

As noted, an increase in film tensile strength results in increased seal strength when other properties remain constant. The above film specification should allow the specified resin to be manufactured to meet the necessary tensile strength requirements. Thickness of 0.0025 in. is adequate.

Effect Of Film Gauge

The important variable in the formula is seal efficiency. This will vary with sealing techniques, sealing equipment, and properties of the film itself. *Film gauge variation is the major factor affecting the seal efficiency.* Other items such as treatment for ink adhesion are certainly important, but, if the above specification is adhered to in this regard, the film should seal efficiently.

It is important to note at this time that the performance of the center seal during testing was better than the performance of the end seals. This is easily understood since the center seal is a lap type seal which allows the distribution of load over a larger area in making the closure.

Maximum allowable air space will vary with the many shaped packages in manufacture. This information is too voluminous to include here, due to the many variables. It is worth noting, however, that on present form-and-fill machinery, deflators function to keep this air space to a minimum. It cannot be overstressed that proper package design, i.e., its size being correctly related to its contents, is of importance to eliminate unnecessary pneumatic pressures which result in seal failures.

C. Machinery Recommendations

To be sure that the foregoing performance standards of the packages are obtained, it is also necessary to have a thorough knowledge of the packaging machinery operation. With consistent film, and also sealing equipment which is able to maintain temperatures, voltages, etc., within minimum tolerances, the following operating conditions can be set by trial runs:

1. Sealing temperature or voltage.
2. Sealing dwell time.
3. Sealing pressure.

Moisture Impairs Seals

Recent reports indicate that seal contamination due to moisture can drop seal strength as much as 50 per cent. This is due to the cooling of the film by evaporation of the water which prevents the thermoplastic material from reaching the optimum sealing temperature.

In handling the frozen product on form-and-fill equipment, there is condensation on the forming tube. However, the condensation should be kept to a minimum to maintain seal contamination at the lowest possible level.

Evaluation is now under way, using film of the above specifications, by a major form-and-fill machinery manufacturer. The results will further increase our knowledge of the problems associated with this package. At the same time, it is hoped that this information will allow further improvements in packaging machinery.

D. Packer Quality Control Tests

If the frozen food packers purchase film to the above specifications, and package according to the procedures outlined above, they can expect a frozen food package satisfactory for their product.

As with all production operations, errors are present which result in a certain number of rejects. For success, these rejects must be

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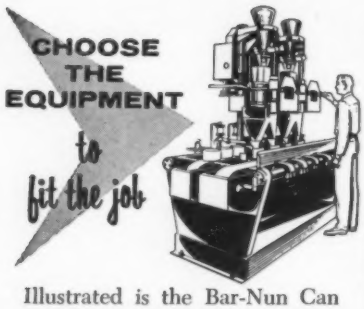

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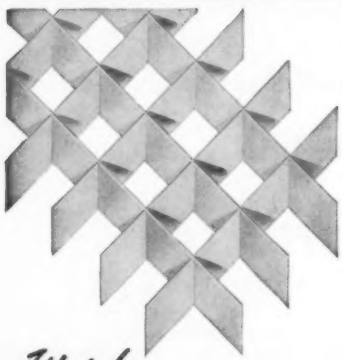

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kept to a minimum. To prevent this loss the following quality control tests are recommended:

1. Film thickness control. Inexpensive measuring equipment is available from several sources* and periodic checks should be made on film thickness throughout the length of the roll. This is probably one of the most important tests.

2. Film impact strength. The standard softball test, as specified previously, should be used to assure that the film strength is sufficient to meet purchase spec's.

3. Ink adhesion. As the degree of treatment of the film will affect its sealing efficiency, periodic checks should be made on both sides of the film using the simple pressure-sensitive tape test.

4. Seal strength. A very simple check is to cut a 1-in. wide strip directly across the heat seal. The strip would then be clamped (1 in. between clamps, and the heat seal centered), and a pull exerted to peel this seal. If elongation takes place (up to 4 in., i.e., 100 per cent) without seal failure, the seal is adequate. It is to be noted that the tensile technique (CS 227-59, Paragraph 7.12) is the referee method in the case of dispute.

5. Vibration test. This will simulate the actual conditions encountered during shipment and should be similar to the test performed by the independent laboratory. A relatively simple vibration tester can be constructed for less than $100.†

6. Drop test. It is recommended that a simple drop test be used at one level, preferably 36 in.

Although other tests are possible, we have limited the enumeration to the above six tests because they are the most reasonable and practicable for a frozen food packer to use. If the packer will follow these quality controls, there should be fewer difficulties in production and fewer complaints from retailers and consumers.

*B. C. Ames Co., 65 Ames Street, Waltham, Massachusetts; The L. S. Starrett Co., Athol, Massachusetts; Brown & Sharpe Manufacturing Co., 250 Promenade, Providence, Rhode Island.

†Information on this unit can be obtained from the author upon request.

‡Sec. 5, *Uniform Freight Classification.*

E. Adequate Shipping Containers

This is again a rather involved study but two general statements are of value:

1. There seems to be little trouble with moisture damage from condensation. This is obvious as the secondary cartons are maintained at temperatures below freezing, and therefore condensation is not present for destruction of the package.

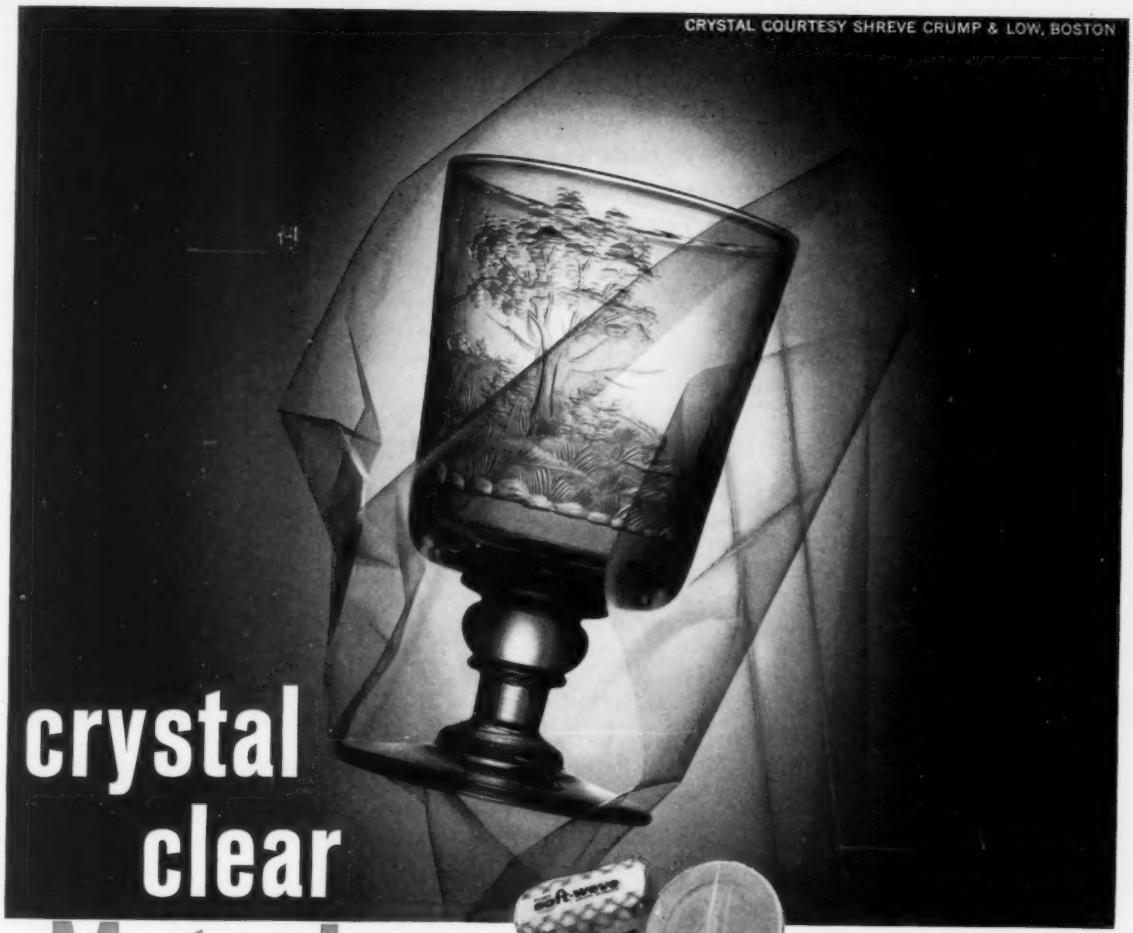
2. The principal difficulty seems to be the inadequate stacking strength of boxes. Rule 41‡ established by the railroads sets forth the requirements for corrugated boxes. For protection of the package in shipment, the requirements of Rule 41 are adequate. But these boxes are generally stacked when in storage. When the boxes are first filled with bags, they are rather solid; but as air in the film bags escapes, the bags pack down resulting in a loose pack within the shipping container.

Thus, under stacking conditions the boxes must support the full weight of the stacked load. We recommend, therefore, if possible that partitions or other internal spacing be used within each bag to help transmit this load through the stack of boxes, thus preventing the collapse of bottom or lower boxes in a stack and resulting damage to the individual bags.

Summary

It is impossible in one article to cover all facets of this package application. If resin suppliers are to contribute to the continued growth of this industry, they cannot be content to follow. They must instead continue to study to improve the resin technology and develop improved films in appearance, strength, heat sealability, and machineability.

This can only be accomplished by continued effort with the film manufacturers and through cooperation with the manufacturers of the packaging machinery. This will lead to increased volume and lower production costs. *(End)*



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Five key steps for identifying a problem:

1—Know what is being done now
2—Set reasonable performance standards
3—Analyze and compare first two items
4—Find value of bringing present situation up to standard
5—Decide whether problem warrants thorough investigation

Recognizing a PACKAGING PROBLEM

By C. C. Sutton,
Manager, Packaging Development,
The Quaker Oats Company,
Barrington, Illinois

Many packaging problems are not easy to identify. On the other hand, one may recognize a problem, but consider it minor and set it aside without realizing there is a situation needing immediate study. Suggesting five key steps for successfully recognizing a packaging problem, Mr. Sutton offers a realistic approach to the subject. He stresses the importance of preliminary study of each problem to determine if it is worthy of complete investigation.

To many people, a packaging research department often appears to be something autonomous that automatically comes up with useful information and developments. The steps by which this comes about are, however, not so simple as could be wished, and involve three general steps:

1. Recognizing a packaging problem.
2. Defining the problem.
3. Solving the problem.

The first two steps, recognizing and defining, are perhaps the most important, for as soon as the problem is really defined, the solution is usually forthcoming with comparative ease.

Are Things Up To Standard?

For the purpose of this discussion, problems will be considered to be substandard situations. The question is: How are such problems recognized so that they can be defined and then solved? To recognize a problem of substandard packaging or operation, two basic kinds of knowledge are required: (1) What is being done now, and (2) what is par for the course, par being a standard that has been set. It's what has to be met—the target.

Having acquired these two pieces of information, the next step is to intelligently and imaginatively analyze and compare them. These comparisons are a *must*, and if they are not made properly, the effort and expense of accumulating the knowledge is worse than wasted.

Furthermore, if worthwhile problems are to be recognized and identified, it is necessary to make accurate estimates of the value of bringing the present situation up to par. Sometimes the possible reward is too small to be worth the attempt.

Pinpointing A Problem

The key steps in successful recognition of a packaging problem worthy of attention are:

1. Obtaining and assembling accurate and complete knowledge of the present situation.

2. Establishing a reasonable standard of performance on the basis of rounded knowledge and good judgment. This standard is "par" for the course.

3. Comparing these two intelligently. Unless this step is carried out by someone whose responsibility it is to do it, and take action where it is indicated, all the other steps are not likely to be effective.

4. Establishing the value of the possible improvement over the present situation; i.e., evaluating the benefit of bringing the present to the standard or par.

5. Deciding whether the problem is worthy of further effort.

Scan Your Situation

Usually, it is worthwhile to go through all these steps in a preliminary way at the outset of study of each problem as it is recognized. This is done to help select the problems that should be studied first by evaluating the potential opportunity or reward for success so that time is not wasted on unrewarding projects.

At this stage, it is not so important to get the full knowledge down to the last detail before going on to the next move as it is to avoid wasting time and effort on unimportant matters. Go through the information once and take a look at it. If it seems as though it might be important, go through it again in greater depth and take a more detailed look at it.

The process here is step-wise; it's a screening process. Sometimes a "once over lightly" will reveal that, even if the worst could befall in this particular situation, it would not be worth even the cost of getting more precise information about it.

ACTING ON COMPLAINTS

Complaints May Rate Priority

For example, if there is a significant increase in the number of consumer complaints shortly after the introduction of a package modification, it may quickly be concluded that the present situation is significantly below par. The potential value of bringing the performance up to par may be the salvation of a market.

The further conclusion is that this is a real problem which should be tackled ahead of a problem, say, of operating efficiency where the reward has relatively smaller potential. From here on, consumer complaints are started on in earnest to interpret their true significance.

C. C. Sutton has a B.S. in chemistry from University of Delaware and an M.S. in chemical engineering from Cornell University. Before joining Quaker Oats he was with General Foods Corporation in physical chemistry section and later as assistant director of the packaging laboratory. He is a member of Institute of Food Technologists, a corporate representative to Packaging Institute, and chairman of ASTM Committee F-2 on flexible materials.

Be Sure Of The Increase

It is necessary first to verify the fact that there has been a real increase in complaints; that the system for bringing these complaints to the attention of management has not been changed; that the complaints are from scattered geographic areas, say throughout the East. Therefore, they probably concern product from a single plant. Samples are then taken from warehouse stocks to verify the condition of the product there. Perhaps the condition of the product in warehouses turns out to be poor.

In an actual case, one company's product had picked up moisture and had caked, but the substandard condition was spotty—not uniformly distributed through the stocks. Meanwhile, the research report was brought out of the files. This report had been issued when the package revision was made and approved. It indicated adequate protection and good results, but emphasized that accurate machine settings were essential to packages of good quality, and it recommended quality control procedures.

Clues To Solution

The point of this story is to emphasize the importance of Step 1; namely, getting the facts. Once the facts were clearly determined, the problem was quickly identified and the solution was quickly found. To understand the ramifications of this packaging incident, a further explanation and commentary is necessary.

The approved package had been made of the right materials, yet it leaked moisture. Evidently, the packaging machinery had not been producing proper seals. Laboratory examination of the defective packages confirmed the diagnosis. Thus the problem was caught by a field audit (about which more will be said later on), whereas it should have been caught by quality control.

The episode serves to show the importance of knowing what is being done in order to know whether a problem exists. It was necessary to find out what was happening by a study of packages in the field, but it should have been evident at the end of the production line. If the facts (quality control data) had been complete, and had been carefully studied and analyzed, the foregoing situation would never have come about.

SAMPLING OF PACKAGES

Field Audits Help

However, since finished-goods inspection detects conditions only at the end of the line, and things can happen to packages after they leave the line, periodic field audits should be made in any case.

Even records of complaints will not indicate accurately the extent of minor defects, especially on low-cost items, since customers will not usually take the trouble to write about them—they will merely buy a competitor's products next time.

The collection of samples for field audits can be done in one of three ways: (1) The sales force can do it; (2) members of a staff

group can be sent out to do it; or (3) the job can be delegated to one of several agencies that are available for this sort of work. They will pick up specified products from designated types of stores in designated cities.

Prefer Outside Agency

Generally speaking, the employment of an outside agency is the best way, for the employees of the agency are not biased. Salesmen know their code marks and if they discover old items on the retailers' shelves, they may think their job is at stake and understandably avoid sending in evidence against themselves.

The agency shoppers are frequently housewives who go out in the middle of the day. To insure that the packages are maintained in the condition in which they were purchased in the stores, the agency shoppers must be supplied with adequate and clear instructions and materials in which to ship the samples.

Should the product be moisture-sensitive, the shoppers should be supplied with a polyethylene or foil bag in a box and told how to close the bag. The general rule is that the agency should be told the precautions necessary so that the packages will reach the laboratory in the same condition they were in on the retailers' shelves when they were picked up.

Make Sample Representative

In arranging for a product audit, it may be well to break up the distribution area into districts—perhaps sales districts—or climatic areas: hot and humid, or moderate, or cold and dry, etc. It will be necessary to balance sampling from each significant area. It might also be well to pick up one sample from three different supermarkets and one sample from each of three "Mom-and-Pop" stores in each city.

What Do Consumers Think?

Another source of information that will aid in recognizing a packaging problem is word-of-mouth comments from women. A well-known merchandiser of foods once said that if he could listen in on all the chatter at the ladies' card tables his task would be a lot simpler.

But, that is not the only sort of information to guide one. In one instance, the wife of a manager had difficulty in opening a screw cap on a jar and had to get him to open it. A quick study revealed that there was an unexplained variation in the torque required to open the jars. It identified a problem.

A further study revealed that only half the girls on the laboratory staff could open the jars with sufficient ease to be satisfactory. A study revealed the upper limit of opening torque which could be tolerated by a majority of the girls. With the problem thus identified, it was ready for an approach to technical definition and solution.

PACKAGING LINE TROUBLE

There is a type of packaging problem that shows up very easily; for example, when a packaging material will not run on the packaging machine. In recognizing this sort of problem, one depends on the reaction of human nature—the irate foreman.

If the material tears all the time, or if it is a pouch sheet that will not slide over the forming horn on a form-fill-seal type of machine, that problem will come to everybody's attention very promptly—no special powers are required to know that there is a problem. In an actual case, the paper tore, not because the paper lacked strength, but because the coefficient of friction unexpectedly became higher.

Review What You Learn

Had it been only a slight problem—one that was not so obvious that the foreman raised objections—the problem could have been identified a little later on by analysis of the downtime data. It is essential to get data *all the time* and look at them intelligently and inquiringly. *(Turn page)*

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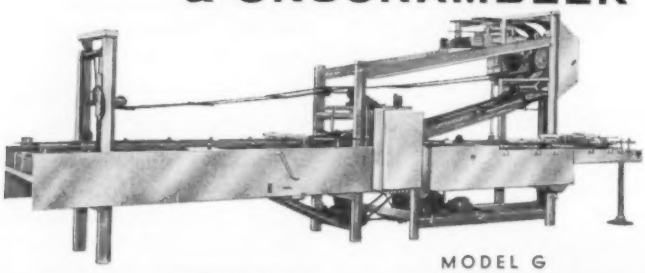

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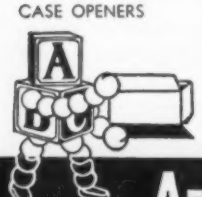

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In one instance, there was a problem on a new product with frequent poor seals. The problem became self-evident simply because pilot-plant personnel were alert and watching for possible trouble. The plastic heat-seal coating developed static electricity. The dusty product floated in the air to the heat-sealing area and stayed in the seals, thereby affecting them adversely.

This sort of problem is not difficult to recognize although the solution may require drastic changes. But this article is concerned only with how to identify the existence of a problem. Its solution may be discussed in some subsequent article.

Compare Machines

One type of packaging problem can be recognized by comparing the data of performance of packaging machines with performance standards of similar equipment. For example, if one of a series of fillers should fill significantly fewer packages per day than its companion machines, a problem should be recognized.

Thus, by establishing the value that would accrue had the deviating filler performed at the standard rate, the justifiable effort and expense in defining and solving the problem of poor performance is readily determined.

Then there are the records of downtime for every machine on the packaging line. These records must show at a glance how much downtime, the frequency of occurrence, the causes, and the trend.

APPLY INTERNAL STANDARDS

Use Cost Yardstick

Perhaps the most important standard against which to compare performance in order to identify problems is the cost standard. If cost accounting is properly set up to provide actual cost promptly for the preceding day, or week's operation, and to provide this in the proper breakdown for easy analysis, problems can be identified quickly. This facet has been covered in an article previously published.*

As with data on machine speeds, net weights, etc., the cost data must be properly broken down into essential components; for example, labor, material, maintenance, etc., and must be studied for short-term comparisons and for long-term comparisons.

Get Fresh Viewpoint

The format should be such that deviations from standard are readily apparent and easily identified with a significant phase of the operation to facilitate routine and speedy examination. But if the analysis of these data is limited to a cursory routine examination, much value will be lost.

Once in a while, a new set of brains should be confronted with the data to see what can be made out of them. It is a trait of human nature that familiarity breeds contempt, and the man who regularly examines any set of comparisons or standards needs to have his viewpoint freshened once in a while. He gets this by having to explain and justify his procedure to an individual unfamiliar with the specific details involved.

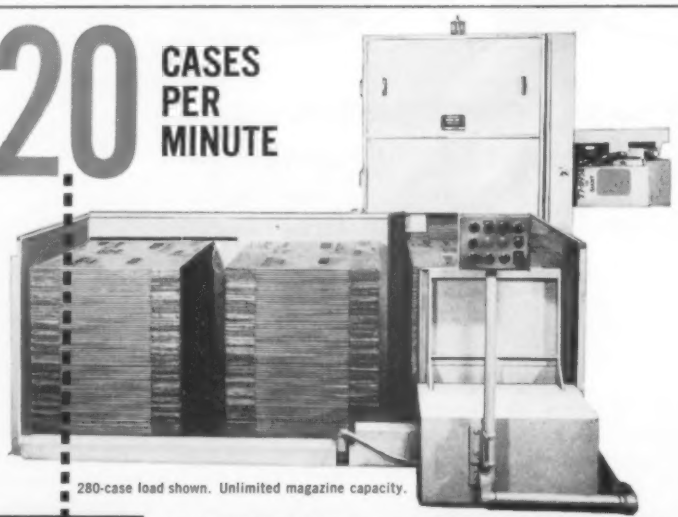
Always Review Performance

A little more difficult to recognize are the problems that develop slowly and require a comparison of present with past performance of long ago to reveal the deviations. Problems of this sort tend to be overlooked and missed entirely unless performance standards are set. Statistics can help to differentiate between normal and abnormal deviations from performance standards.

Performance should be expected to improve with the passage of time and expenditure of technical effort. One can always be certain that competitors will be actively improving their own efficiency. It is never safe to say: "Well, we are doing as well as we were five years ago." A company must continually

*Henrici, Stanley B., "Packaging's ultimate test: Standard costs," PACKAGE ENGINEERING, 4 (1959), No. 11 (Nov.), p. 46.

20 CASES PER MINUTE



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improve or competitors will outrun it.

So much for internal standards. There are also the standards of theory and perfection; for example, perfect net-weight control, or the percentage of the total number of cans or jars paid for as compared to the number actually carrying product out of the plant.

USING EXTERNAL STANDARDS

Comparisons of performance with external standards pose the difficulty of determining what are *realistic* external standards. It should be explained that an external standard is something outside the company, and outside one's own control. Usually, it is what competitors are doing. And an external standard should be what competitors are doing with a comparable product. Sources of information on these external standards are many in addition to one's own observations.

Tips From Salesmen

Without revealing competitors' confidences, suppliers, machinery manufacturers, trade literature and advertising, and industry association contacts can call attention to packaging innovations or possibilities more quickly than might be noticed otherwise. Such bits of information can seldom be applied directly and completely—they have to be tailored to one's own situation with one's own experience and judgment.

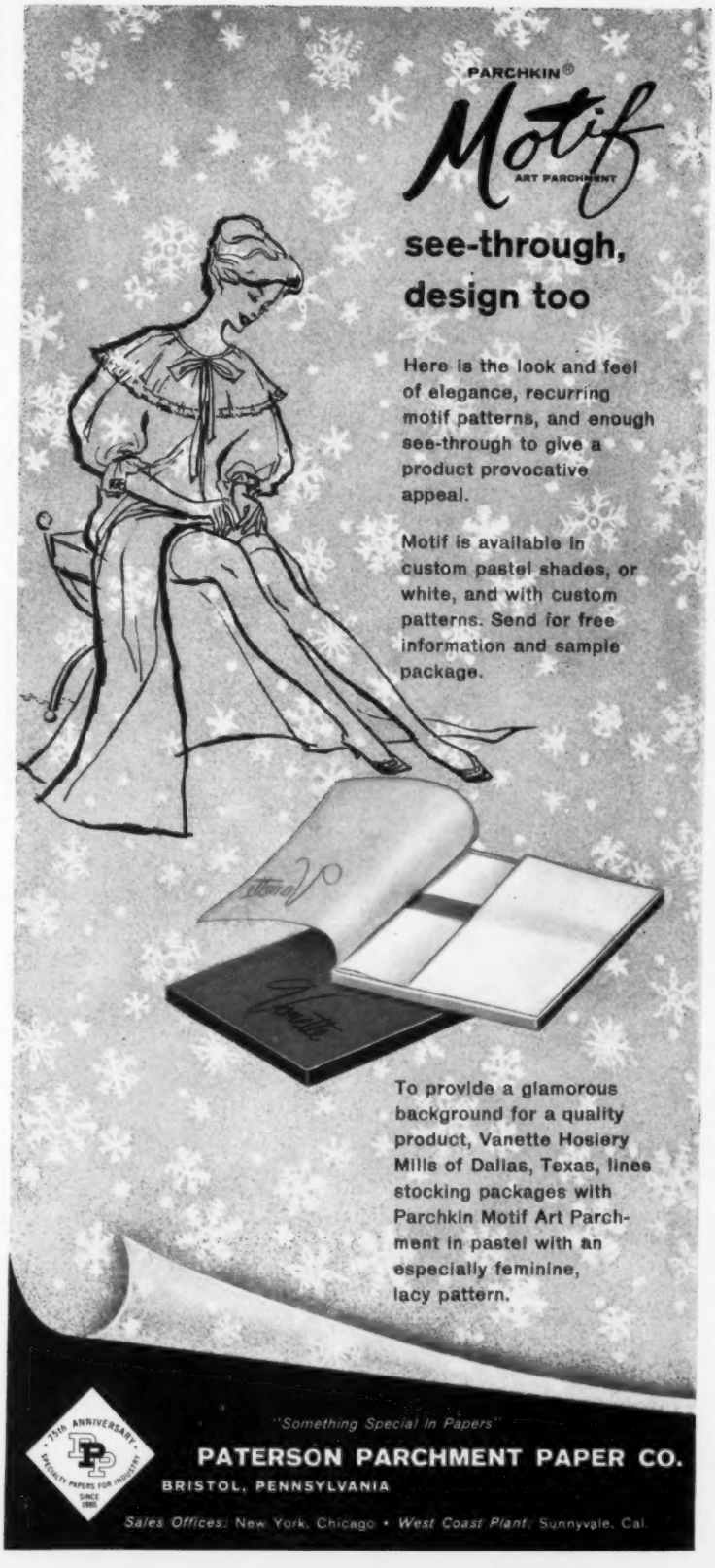
To ignore external standards is nothing short of slow suicide.

New Standards Show Up

The packager who is now using cellophane must determine for himself whether a new standard is being set for him with polyethylene. If his decision is that it is a new standard, then he has identified a problem.

External comparison with competition's surface design should also be made via the techniques of consumer and motivational research.

Comparisons are made of opening features by taking a pair of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competitive packages and masking out the printing before assaying the opening device. It is very important to learn what people really think of it.

Watch The Competition

One of the helpful ways of identifying problems of packaging is the competitive product audit similar in technique to the previously discussed field audit of one's own packages. In the competitive audit, interest centers on what the competitor is doing and how its competitive product rates in comparison with one's own product at the point of sale.

You may find that your competitor has more or fewer leakers, or crushed packages, or at what oxygen content its packages reach its consumers. Changes in competition's packages may be identified.

As soon as a change in your competitor's packaging technique is noted, a potential problem has been identified before it develops into a serious situation.

Of course, problems can be identified the easy way, by watching the share of market shift to a competitor. But, by then it may be rather late to salvage the situation.

Facts Demand Study

One must know what he is doing and know both internal and external standards. It requires intelligent comparisons of performance with the standards and rigorous analyses. There is no profit in knowing that the data are in the house if they are not studied.

Superficial examination may give a false sense of security. It is necessary to study and analyze the data, and eternally pose the question: Is this a realistic comparison? If this machine has a certain downtime, then what are the causes of this lost production? It is fruitless to say that downtime is off, or up.

USE YOUR IMAGINATION

There is still another type of standard, and that is one's own imagination. If one can imagine a way by which packaging can be done better than at present, then the imaginative way should be tested out. If it isn't tried, a competitor is likely to dream up the identical method and perhaps adopt it. This is a method of identifying a problem *before* it has opportunity to become a problem in actuality.

A receptive attitude is indispensable in this type of work. Middle management and plant superintendents must study the data on quality control, machine performance, and the like. They should listen to what the suppliers tell of what competitors are doing. While a supplier will not tell secrets, it may say something like this: "X Company is now using a tear string on one of its packages"; or it may say how a certain job could be done even better.

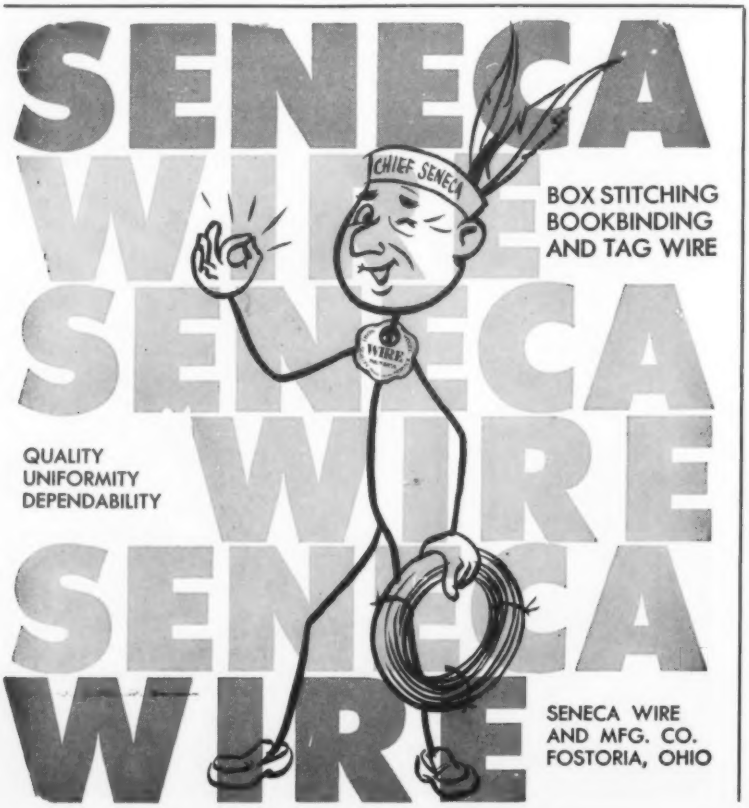
Make Right Interpretation

In summary, packaging problems are situations that are below standard. To recognize a problem, a packager must constantly know what he is doing, and what the standards are. This means proper records, and proper analysis of these records.

In a sense, it is comparable to the task of military intelligence. The collection of factual information is important to be sure, but it is far more important to evaluate the facts correctly and determine what they mean.

Remember that famous December 7 at Pearl Harbor when an inquisitive young man was fiddling with the new radar equipment that had just been put into operation? Fact: He saw planes approaching from a considerable distance. Wrong Interpretation: They were friendly planes. Correct Interpretation (made much too late): They were enemy planes.

In packaging work, the facts (data) must be constantly collected and regularly reviewed, and correctly interpreted; and then they must be followed by proper action. *(End)*



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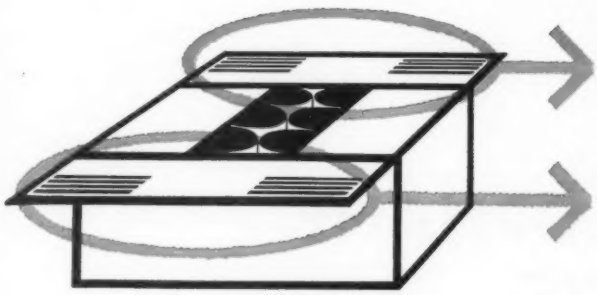

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EMHART

Eliminating excessive waste of packaging materials and product, and minimizing packaging machine downtime pays dividends—in dollars, customer goodwill, and improved efficiency. Suggesting that organization of the entire packaging operation is the first step toward this end, Mr. Kaffenberger gives pointers for keeping cellophane wrapping machines in tip-top shape—including: checking unwind brake, cut-off knife, sealing mechanism, etc.

CUT CELLOPHANE COSTS

with better machine performance

By Richard Kaffenberger,
Assistant Group Manager, Technical Service,
Market Development and Customer Service Laboratory,
Film Department,
E. I. du Pont de Nemours and Company (Inc.),
Wilmington

Packaging personnel often try to reduce packaging costs, but in many cases it is difficult to know just where to begin. However, our experience has shown that as much as 5 per cent can often be sliced off the total cost of a plant's cellophane packaging operations by eliminating excess wastage.

Record, Calculate Loss

Costly losses in film and product, machine downtime, and unsightly packages are all elusively expensive, both in dollars and in customer good will. It pays well to record and calculate this loss so that effective steps can be taken to minimize it.

We have found that organizing the entire packaging operation is an excellent way to start. The size of the operation will dictate the exact organization required, but the following points have proven important:

1. Establish responsibility with specific individuals for maintaining and operating packaging equipment. See that each man recognizes where his responsibility begins—and ends.
2. Train each person for his particular job. This is especially vital for those who set up and maintain packaging machines.
3. Devise a preventive maintenance program that includes: Routine oiling and greasing on a schedule recommended by the machine manufacturer, daily machine cleaning, periodic machine inspections to check timing and worn parts, and an adequate spare parts inventory.
4. Establish definite packaging standards; i.e., specify correct cellophane type, roll width, cut off, machine speed, and sealing temperatures for each package. Also include specifications on machine change parts, required settings, and other adjustments. These should be written and posted near each machine.
5. Maintain adequate production and maintenance records for the entire packaging operation.
6. Operate safely. See that the area around the machine is kept clear, that moving parts and pinch points are well guarded, and that mechanics and operators shut off machines (pull the main switch, fuse, or safety plug) whenever cleaning, adjusting, or clearing jams.

Such a program will take time and attention to establish, but it should pay real dividends in improved efficiency for the packaging operation.

Try Trouble-Shooting

At least one man in every packaging organization should be skilled at trouble-shooting. Too frequently, for example, when heat seals on cellophane packages may be poor, the only corrective measure known to the machine operator is to increase the sealing temperature.

However, if the poor seals are due to inadequate sealing pressure or dirty sealing surfaces, increasing the sealing temperature may do more harm than good, by causing scorching of the cellophane and rapid build-up on the sealers. But, if there is a skilled person to take the time and effort to analyze and correct each machine problem that arises, much lost time and waste can be prevented.

Whenever packaging machinery is not operating efficiently, there is bound to be some good reason for it. Often it may be quite obvious and prove simple for a trouble-shooter to cure. But at other times it may not, and a little more time and systematic approach may be helpful in uncovering the difficulty.

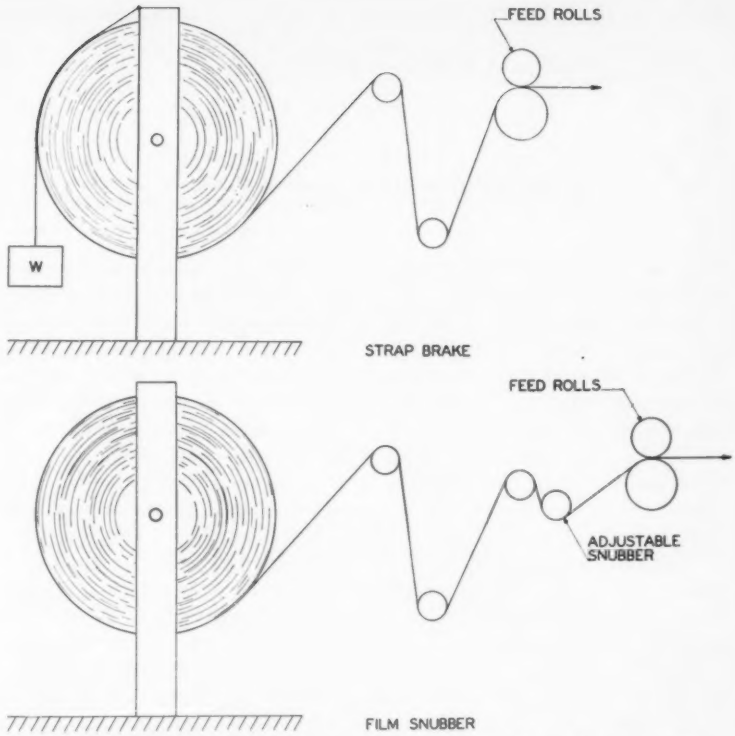
Handle Film Correctly

First of all, check the storing and handling of the cellophane by packaging operators and storehouse personnel. A roll of cellophane should never be unwrapped, for instance, until it is ready to be used, because the moistureproof wrapper is sealed to protect film edges against relative humidity changes.*

Handle the rolls carefully to avoid telescoping or nicked edges. Thread the machine according to the manufacturer's instructions. Storage and handling of cellophane may seem more important to those who are responsible for this end of the operation if they are apprised of the fact that a 9½-in. O. D. roll of cellophane, 12½-in. wide, costs about $25.

A good technique for trouble-shooting is to start at the film-unwind end of the machine and progress on through to the discharge end.

*Ideal storage conditions for cellophane are 35 to 50 per cent R.H. and 70° to 75°F.



1 UNWIND BRAKE TENSION can be controlled effectively by either of these methods. Proper tension minimizes web breaks, short sheet feed, registration problems, and film weave.

Check Unwind Brake

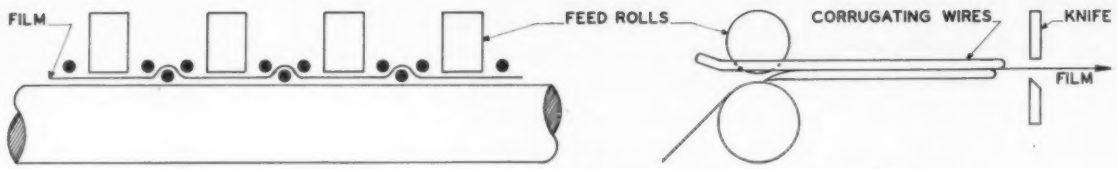
First, check the unwind brake tension. Too much tension will cause web breaks, short sheet feed, or electric-eye registration problems. This condition is more likely to occur when the diameter of the cellophane roll has worked down. On the other hand, too little tension may result in excessive film weaving.

This problem is sometimes attacked by using unnecessarily wide film, but this practice both wastes film and causes "dog ears" or otherwise unsightly packages. Instead, unwind tension and weaving can be effectively controlled by a simple strap brake or film snubber (see Fig. 1). Check plates on the unwind mandrel will also help control film weaving.

Three Types Of Film Feed

In analyzing machine problems further, it is important to distinguish between the three types of film feed on packaging machines: pull-feed, belt-feed, and push-feed. The pull- and belt-feeds are reasonably trouble-free, providing brake tension is right, and there

Richard Kaffenberger was graduated from Brown University with a B.S. in mechanical engineering. After doing research and development work for a chemical company and instructing at University of Buffalo, he joined Du Pont as an engineer at the Buffalo film plant technical section. He became technical representative for the New York packaging sales district and last year was transferred to the film department's market development and customer service laboratory at Chestnut Run. Mr. Kaffenberger is a member of Flexographic Technical Association.



2 CORRUGATING DEVICE, between feed rolls and cut-off knife on push-feed machines, stiffens cellophane in feed direction. Corrugating rods, belts must be clean and aligned properly for good performance.

is no interference or excess drag on the film.

However, film feeding problems are more common on push-feed machines. Most of these machines incorporate some form of film corrugating device that is placed between the feed rolls and cut-off knife, and is designed to stiffen the cellophane in the direction of the feed (see Fig. 2).

With this type of machine, feed jams will result if corrugating wires, rods, or belts are dirty, missing, or out of alignment. Frequent cleaning and adjustment of the film feed section on push-feed machines helps insure good performance.

Examine Cut-Off Knife

On the other hand, a problem that may appear to be caused by the film feed may actually be the result of a poorly adjusted, dull, or nicked cut-off knife. Cutting a sheet by hand and examining the cut edge will normally reveal whether or not the knife needs attention.

Product feed can also be a problem, if the size and shape of the product varies greatly. Carton or U-board flaps must be properly tucked and broken to avoid jams and produce neat packages.

Wrapping Is Critical Point

One of the most critical sections of a packaging machine is the point at which the cellophane is formed or wrapped around the product. Here, it is most important to establish proper machine timing, spacing, and clearance, and to use the right size of change parts (forming tubes, boxes, mandrels, tuckers, or folders) for each package. Using the same change parts for two different-sized packages may save set-up time, but it will certainly degrade the package appearance.

Also, it is important to store these change parts carefully. A couple of years ago, while investigating a complaint that cellophane was tearing on a vertical make-and-fill packaging machine, we found that film was being pinched between the forming and filling tubes. Close examination showed that the forming tube had a dent at the lip, apparently having been knocked over and dented when not in use.

This points up the need for some sort of rack where change parts can be stored safely and conveniently when not in use. Number or otherwise identify each part so that the right ones will be used for running each package.

Careful Set-Up Pays

Changes in machine settings can also cause problems. Whenever a size change or an adjustment in timing or spacing is made on a machine, run a couple of packages through by hand. Most machines have a hand wheel which can be used for this purpose.

In setting up a machine, adjust folders and tuckers to produce a neat wrap with the desired degree of tightness or looseness. This is important. For example, moist products such as bread or bacon require a tight cellophane wrap, but overwraps for cartons should be loose to allow for shrinkage of the film.

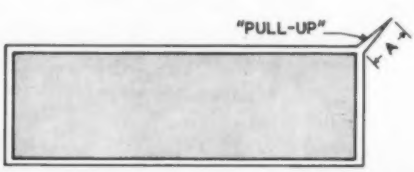
How Much Looseness?

For properly controlling the degree of tightness around the girth of the package, most wrapping machines have some sort of adjustment. The amount of looseness or "pull-up" (the amount of film that can be pinched between the forefinger and thumb along one edge of the package as shown in Fig. 3) ranges, for various sizes of carton overwraps, from 1/16 in. for a five-stick gum package to 1/4 in. for a large cracker or cookie box.

Too much air in a cellophane bag may also be a problem, causing bag breakage during shipment. On make-and-fill packaging machines, this can be minimized by using sponge rubber deflators mounted beneath the sealing jaws to squeeze out excess air before the bag is sealed; or by filing a narrow groove in one of the sealing dies to create a small void in the heat-sealed area and allow excess air to escape. Before using the latter method, make a test to determine what effect, if any, such a void will have on moisture protection of the package.

Reduce Machine Drag

Often, problems can result from excess drag over formers or folders. This may cause web breaks or feed problems on pull-feed bag



5-STICK GUM PACK, A=1/16 IN.
5-PACK OF CIGARS, A=1/8 IN.
LARGE CRACKER BOX, A=1/4 IN.

3 DEGREE OF CELLOPHANE TIGHTNESS around package is important—moist products need tight wrap; overwraps should be loose to allow shrinkage. "Pull-up" (amount of film which can be pinched between forefinger and thumb at package edge) varies for given package.

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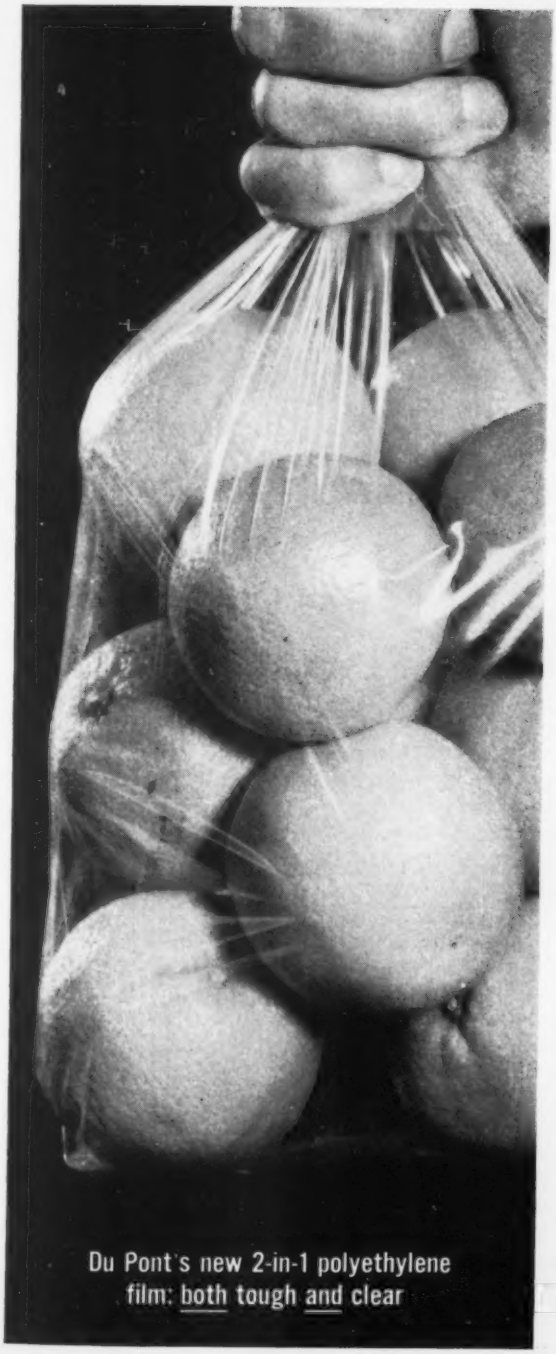

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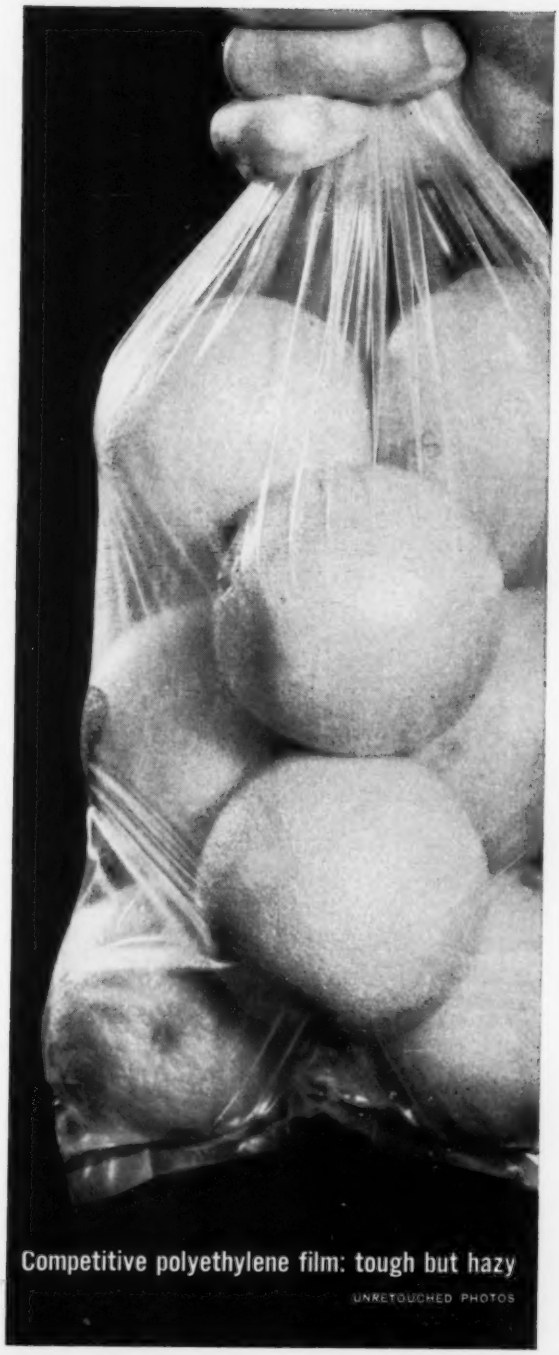

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machines, and pull-out of the bottom lap or end folds on overwrapping machines. Because drag increases as folders and formers wear smooth, it is wise to roughen any smooth surfaces with a medium grade of emery cloth, rubbing in the same direction that the film travels.

Drag may also be caused by folders and formers becoming heated by conduction from adjacent heat-sealing bars or plates. Cellophane has more drag when traveling over metals heated to 200° to 250°F. than it does over metals at either room temperature or sealing temperatures (250° to 400°F., depending on type of machine and cellophane). When the folders and formers are properly insulated from the heat-sealing section of the machine, this problem should be solved.

Watch The Heat Seal

Heat sealing itself is one of the chief causes of trouble on packaging machines. Proper temperature, pressure, and dwell time are all required simultaneously for good cellophane heat seals.

On any packaging machine, dwell time is a function of machine speed. This speed should never be higher than that required to keep up with production. Put another way, the machine should operate with most conveyor pockets filled with product at all times, eliminating frequent idle periods for product to catch up with fast machine operation. This permits use of the minimum sealing temperature that will produce good heat seals, and results in less build-up on the sealing surfaces—not to mention the obvious advantages of longer machine life and fewer package rejects.

Proper sealing pressure is probably the most frequently neglected factor in heat sealing cellophane. First of all, the sealing jaws, bars, wheels, or plates must be kept clean if adequate and uniform pressure is to be applied. Sealing surfaces should be cleaned daily—and more frequently if necessary (with electric power turned off each time for safety).

Keep Sealing Surface Clean

Heavy carbon deposits can be removed from the sealing surface with a wire brush or a dull scraper. On flat sealing bars or plates, a medium grade of emery cloth can be used sparingly, rubbing in the direction that the package travels across the plate. Light carbon deposits can often be removed with a brass scouring sponge (*avoid* using steel wool, for it may disintegrate and contaminate the machine). A light application of silicone oil or grease will help minimize carbon build-up and make cleaning easier.

When sealing surfaces are coated with Teflon fluorocarbon resin or other materials that are sensitive to abrasion (or are of the silicone-oxide-coated, cross-serrated variety†), *do not use* scrapers, metal brushes or emery cloth. If the material to be removed is water-soluble, such as sugar, these surfaces should be cleaned frequently with a damp rag and a nylon bristle brush. Whenever possible, this should be done before the deposit carbonizes on the surface. Solvents other than water should be used with caution, and then only when approved by law. Sealing surfaces should be cool and sufficiently ventilated whenever using solvents.

Pressure Is Important

A look at the heat seal itself will usually indicate whether or not the sealing pressure is adequate and uniform. However, on crimp-sealing machines, a more sensitive study of pressure uniformity can be made by placing a thickness of paper towel between the heated jaws, closing them, then removing the towel and holding it up to a light to observe the pattern made by the sealing jaws.

On cellophane overwrapping machines, spring-mounted sealing plates should be adjusted with a

†Stephan, Paul G. and Maros, Frank G., "Jaw modification improves film sealing," PACKAGE ENGINEERING, 4 (1959), No. 10 (Oct.), p. 48.

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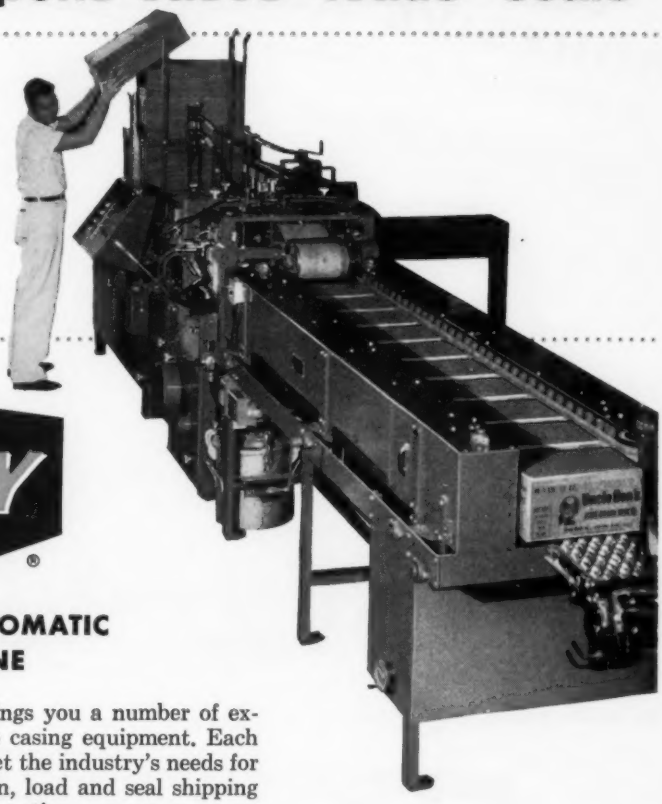

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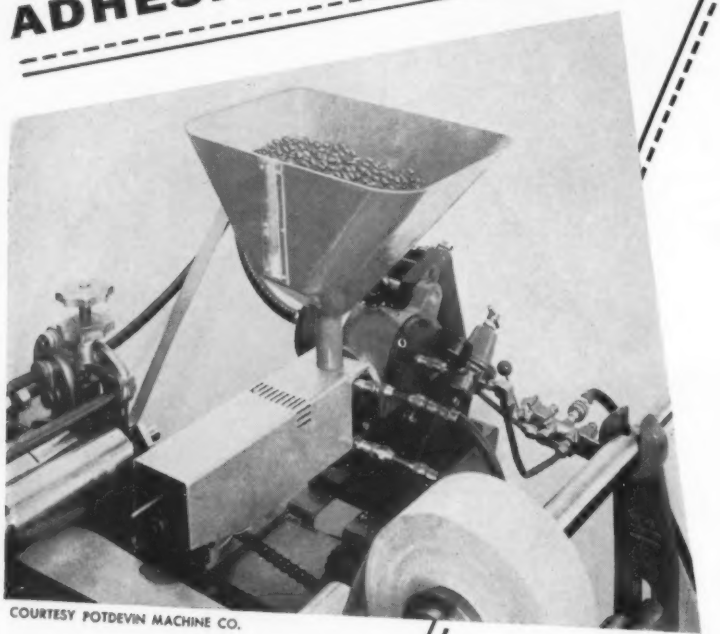

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slight taper or "toe-in," so that each package passing between the plates causes a definitely noticeable deflection of the plates. If you can't observe this deflection while the machine is running, the chances are that the sealing pressure is not adequate.

Temperature Is Critical

After proper dwell time and sealing pressure have been set, the correct sealing temperature should be established. This should be the lowest temperature that can produce good heat seals. For most heat-sealing cellophanes, this will usually be between 250° and 300°F. for crimp-seal jaws and between 350° and 400°F. for flat sealing plates.

There is some confusion as to what constitutes a good heat seal. Some people don't consider that a seal is good unless the film breaks or shatters when the seal is stressed. But, when this happens with cellophane, it usually indicates that an excessive sealing temperature was used, which dried out the film and caused it to become brittle.

Our experience shows that a good heat seal is one that can be peeled apart under a slow, steady pressure without tearing the cellophane.

Use A Pyrometer

A pyrometer—a device that measures high temperatures—is very helpful in maintaining proper sealing temperatures, locating hot spots or burned out heaters, and determining accuracy of thermostatic controls. Incidentally, each sealing surface should have its own individual thermostat.

Periodically, sealing surfaces should be checked with the pyrometer during a period of time that is long enough for the heater to go on, off, and then on again. If the temperature cycles more than 40° to 50°F. between high and low, the thermostat should be replaced.

Hot spots can be corrected by altering the heater pattern or by making thicker sealing plates out of more conductive materials, such

as aluminum or brass. These materials, however, should not be used on sealing surfaces for polymer-coated cellophane, unless the surface is first covered with Teflon. Steel or stainless steel sealing plates, or the SOCS-jaw construction mentioned earlier,† are recommended for polymer-coated cellophanes.

Final inspection of each package can be made while packing. "Dog ears," poor heat seals, and other defects that detract from the appearance and functionality of the package should be caught and corrected immediately.

Check Out Problem Thoroughly

Detecting the true cause of difficulties on packaging machines is not always a straightforward matter. For example, in one recent case, we pinpointed the cause of a heat-seal problem on a lollypop wrapper by observing a definite pattern in the way that the wrapped pops were discharged from the machine; every sixth wrapper was not heat sealed.

Since the machine had six wrapping stations revolving on a chain drive, it was evident that one of the stations was not functioning properly—although the machine speed was too fast to observe this while running. By stopping the machine, we found that the hold-down shoe on one wrapping station had been bent and did not exert sufficient pressure on the heat-sealing plate. Straightening this pressure shoe solved the heat-seal problem and brought the efficiency of the machine back to normal.

Whether the problem is simple or complicated, it will pay a packager to trouble-shoot it until it is solved. Film wastage and poor package appearance can easily cost more than paying for the time it takes a competent man to find the source of the trouble. Fortunately, the cause may often be simple—easily spotted with a systematic check of the equipment—and the solution may require no more than a small adjustment. *(End)*

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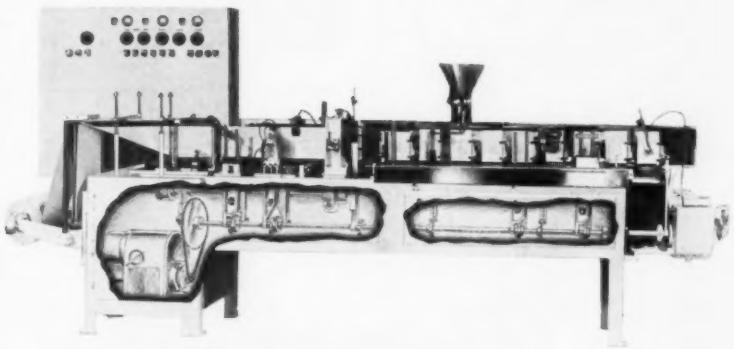

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Frank A. Paine is an honor graduate of University of London with a B.S. in chemistry and a Fellow of the Royal Institute of Chemistry. He has worked in analytical control for a London brewery, and at the Armaments Research Establishment, Ministry of Supply. After World War II, he joined PATRA (Printing, Packaging and Allied Trades Research Association) and did research on the gas and vapor permeation of plastic films and later supervised the package testing laboratory. In 1958 he joined Bowater in his present capacity. As a council member of British Institute of Packaging, Mr. Paine is active in its education program and handling of examinations for qualified membership.

Part I—Transport test

LAB TESTS
predict package performance

By Frank A. Paine,
Senior Scientist, Packaging and Conversion Section,
The Bowater Research and Development Company, Ltd.,
Northfleet, Kent, England

Many of you, although using identical procedures in conducting laboratory tests to predict package performance in the field, disagree about both the procedures themselves, and in interpreting the results. Giving a British viewpoint, Mr. Paine suggests using standard test schedules incorporating the main hazards of transport to determine the distribution system for which a package is suitable. The tests are the usual ones, but their arrangement in the schedule and their interpretation merit your study.

The first essential of any laboratory test for package performance is an accurate correlation with the hazards existing for the particular package in the specific distribution system for which it was designed. Other correlations are also required before a complete picture of package performance can be obtained. The two principal ones are correlation between the laboratory transport test and a simpler quality control test on an empty package, together with a correlation between this control test on the package and the relevant properties of the material from which the container is fabricated.

With the aid of these correlation factors, a complete understanding of the characteristics of the final package would be possible. Although this state of affairs has not been attained, considerable progress has been made.

I. Laboratory Transport Test

Testing of packages for their resistance to the mechanical hazards of transport can be conveniently considered under:

a. Investigational or research testing.
b. Comparative testing.
c. Assessment or evaluation testing.

The particular type of testing used in any instance will be dependent on the circumstances and the information desired. The equipment required to make these tests is now fairly standard in packaging laboratories, and has been developed as a means of reproducing the mechanical hazards of transport under controlled conditions.

Test Methods

In the commercial sense, the best package for any particular purpose should be defined as the package

which will do no more than the job required for the minimum expenditure of time and labor. The best package is, therefore, not the one which is strongest; neither is it the one that costs the least. It is the one that will protect the contents against the hazards the package will undergo during its journey, *for the minimum cost.*

The obvious way to test packages is to carry out a field trial upon a sufficient number of packages under the actual conditions for which the packages were designed, and then to study the results obtained. While this is the ultimate test of package design, carrying out such field tests accurately is time-consuming, and requires that a fairly large number of packages be sent out by different routes and methods of transport.

Transport Hazards

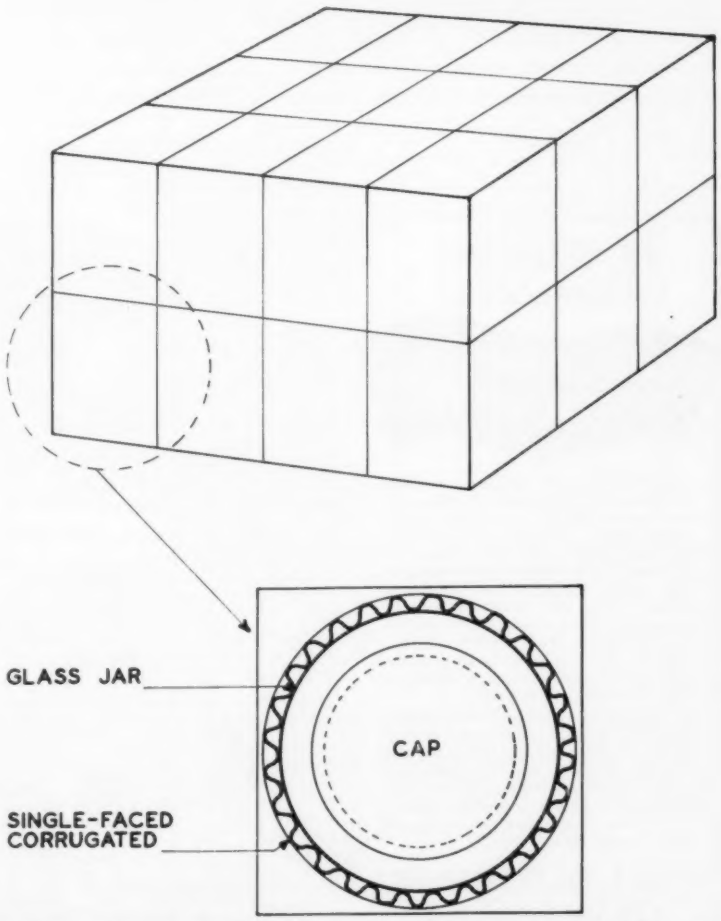
Laboratory package testing is a means of short-circuiting the process of field testing, and obtaining results in a much shorter time with a reasonable degree of accuracy and under controlled hazards. There are four main hazards of transport:

1. Drops and impacts.
2. Compression forces.
3. Vibration, and vibration under stacking loads.
4. Climatic variations.

Equipment used in the United Kingdom for assessing the efficiency of packages against these hazards is similar to that used in the United States. There are two main types of drop testers: the sling type, and the table trap-door type. The floor used for dropping is either concrete or steel. No standardization on this aspect has yet been agreed upon.

Recently there have been some experiments in certain laboratories with a floor made of steel plate inclined at an angle of 10° to the horizontal. Proponents of this system argue that flat drops are, first of all, rare in transport; secondly, are difficult to produce exactly, and the angle of 10° gives far

1 VIBRATION TESTS simulate vibration shipping cases receive in transit. "Fence" keeps cases from sliding off during tests to reproduce effects of vibration under stacking loads.



2 CARTON ARRANGEMENT (upper diagram) in case is two layers, 4x3. Enlarged plan view (lower diagram) shows use of single-faced corrugated surround as protection to glass jar.

better reproducibility of effect. No general agreement on this type of test is apparent as yet.

The Conbur tester* is the standard equipment employed for studying the effects of humping and shunting (switching in U.S.) by railroads. Various methods are employed in using this equipment, and many laboratories now use shock recording equipment as a means of standardizing the impact.

Vibration effects are studied by various types of tables of which the American L.A.B. tester is typical. (See Fig. 1.) During the last two years, a Swedish-made vibration table† which gives control of amplitude and frequency in both the horizontal and vertical directions has been produced. This instrument opens up considerable possibilities in studies of this hazard. The employment of "fences" to keep packages from sliding off the table during tests of stacked packages, for reproducing the effects of vibration under stacking loads, is also common.

Effects of stacking for prolonged periods under various climatic conditions are best studied by the simple process of loading the container uniformly to the proper degree in a room conditioned to the type of climate required. The compression test, in which an empty container is loaded between platens moving at the standard rate of ½ in./min., with the load increasing until the container fails, remains the control test in this field.

RESEARCH TESTING

Investigational testing is normally used to ascertain the inherent strength and protective qualities of any pack. The data obtained gives information on the weaknesses of the particular design, and may be used as a basis for modifying the package or to reduce its cost. It should be emphasized that, throughout this article, the term "package" refers to the complete arrangement of container, fittings, cushioning, etc., *and the contents* as dispatched by the manufacturer and received by the customer.

Use Drop Test

The use of investigational testing is best illustrated by considering an actual example of the use of the drop test.

Let us assume that we have a package 15x12x10 in., weighing 32 lb. and holding 24 folding paperboard cartons in two layers arranged 4x3.

Each carton contains a glass jar wrapped in what we term (in Britain) a corrugated paper surround. A surround is a wrap of single-faced corrugated board in a single layer with the corrugations inward.

The packing arrangement has all jars in the same position with their caps pointing at the 15x12-in. face which is the top of the one-piece, regular-slotted shipper containing them. (See Fig. 2.)

Let us consider the symmetry of the package to work out the particular positions of fall required in the test. Assuming that the bottles, the cartons, and the outer cases are symmetrical, then the top and bottom of the package are different, but the two 15x10-in. faces and

*Invented by the Freight Container Bureau of the Association of American Railroads.
†Made by Lawrentz and Wettres, Stockholm.

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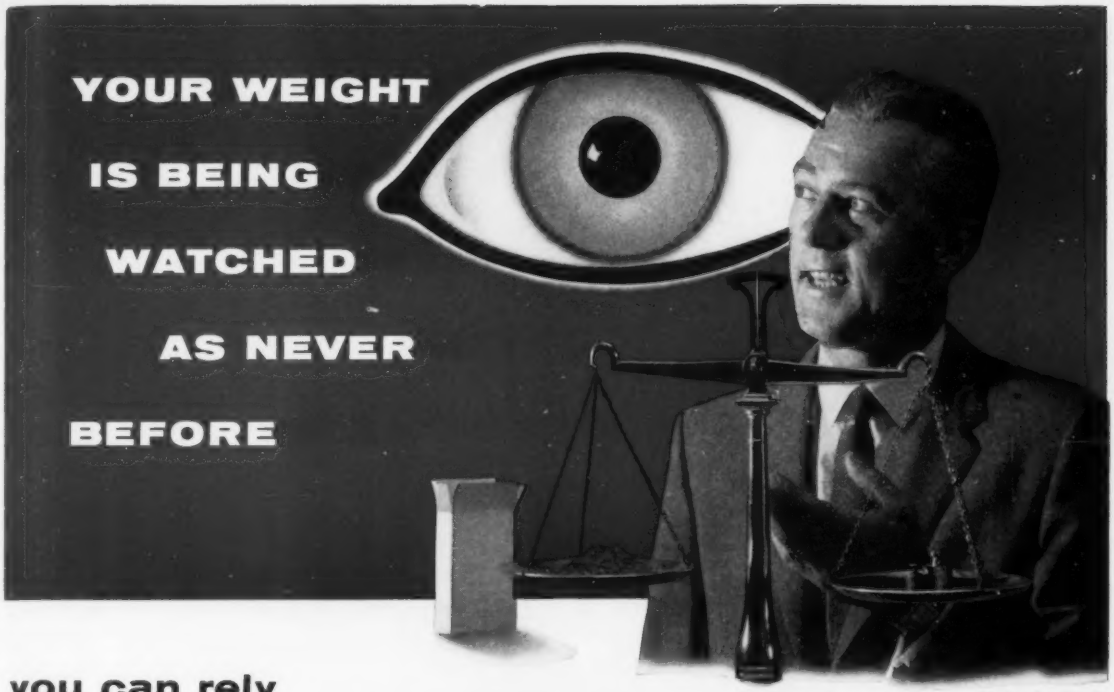

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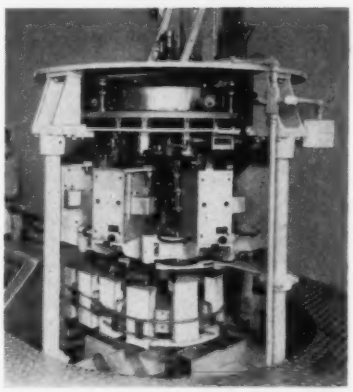

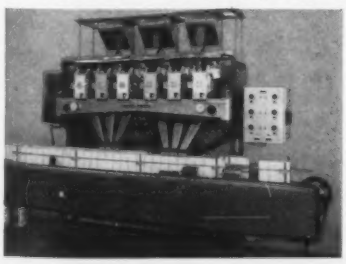

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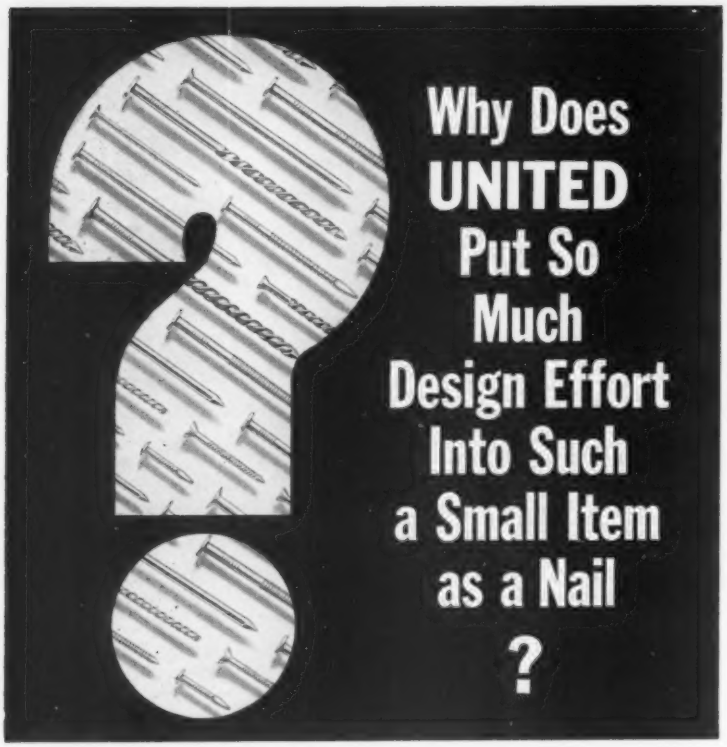

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the two 12x10-in. faces are the same.‡

Positions Of Fall

Different positions of fall are then possible. These are falls onto the:

1. Base,
2. Longer base edge,
3. Shorter base edge,
4. Base corner,
5. Larger side face,
6. Smaller side face,
7. Vertical edge,
8. Top corner,
9. Longer top edge,
10. Shorter top edge,
11. Top.

A package is then dropped through this sequence of falls from a lower height than is anticipated will cause breakage (e.g., 12 in.). If no breakage occurs, then a second package is dropped through the same sequence from a greater height (e.g., 18 or 24 in.). If breakage occurs during the first sequence, then the fact is noted and the sequence completed with the second package. The height is then raised, but the positions of fall causing breakage at the first drop height are omitted from all subsequent sequences.

By proceeding in this way, it is possible to find a breakage height for each of the main positions of fall and to construct a table similar to the following:

Position Of Fall	Breakage Height (ft.)	Jars Broken (no.)
Base	Above 3	
Longer base edge	Above 3	
Shorter base edge	2.5	1
Base corner	Above 3	
Larger side face	2	3
Smaller side face	1.5	2
Vertical edge	Above 3	
Top corner	Above 3	
Longer top edge	Above 3	
Shorter top edge	Above 3	
Top	2.5*	

*Caps loosened; no actual breakage.

Get Quick Evaluation

Data of this type allow an immediate assessment or evaluation to be made of the strengths and

‡Strictly speaking, the manufacturer's joint in the shipper is a further point of asymmetry, but in very few instances is it neccessary to take this into account.

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weaknesses of the package. In this instance, note that only two positions of fall will cause breakage at drop heights of 24 in. and below, while all four positions will not cause trouble unless a height of 24 in. is exceeded. If the package requires improvement, the points on which to concentrate are known. If the package needs reduction in price, then the ways in which the economy might be effected are indicated.

The procedure used is not a rigid one, but must be devised to suit the circumstances. For example, an *increasing* drop-height test may not be desirable or realistic; so, a *repeated* drop test from an arbitrarily *fixed height* may be adopted. The type of package, the contents, and the information required will influence the choice of basic test procedures, but the principle of the method will remain the same.

COMPARATIVE TESTING

In many instances, it is required to evaluate the performance of a package that is to be used as an alternative to another, the performance of which, in a particular distribution system, is known. The reasons for the change may be to improve the performance, to reduce the cost, or may be concerned with sales appeal, etc. But no change is anticipated in the handling techniques in transport.

Base Test On Hazards

The first step in such instances is to assess the hazards of the journey; then simulate these hazards by producing an arbitrary test sequence based on those hazards. As a general rule, this can be done by analyzing the progress of a package from manufacturer to customer.

With a devised test sequence, representative of the hazards of the journey, the current package can be subjected to the tests. Then, the intensity of the various hazards can be adjusted, if necessary, to give the degree and type of damage found in practice with this package. The alternative package is then subjected to the same sequence, and the new package's efficiency compared with that of the current package. The results can often be used to predict the type and degree of damage likely to be experienced when, and if, the alternative package is put into service.

EVALUATION TESTING

Fundamentally, there is little difference between this type of testing and comparative testing. Since, however, there is no existing package of known performance, against which the test sequence can be checked, the accuracy of the results depends entirely on the assessment of the journey hazards. Predictions as to the efficiency of any particular package are subject to wider margins of error than those obtained by the comparative technique.

(The test schedules will be included in the final part of this article which will appear in next month's issue.)

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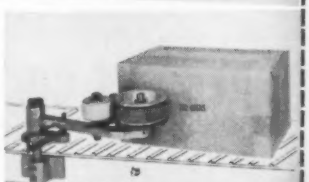

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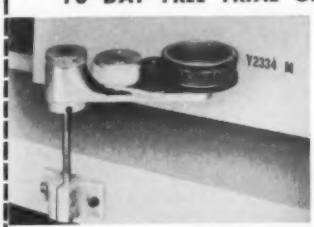

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- Package Accessories and Labels

Part II—Industrial products

Select the right package for a *STICKY PRODUCT*

By William G. Louden,
Director of Product Development,
Paterson Parchment Paper Company,
Bristol, Pennsylvania

Tacky non-food products present packaging problems which are, as a general rule, much more difficult to handle than those associated with the packaging of sticky food products. Most foods are sticky only for a certain stage in their life. This is definitely not the case with many of the rubbers, plastics, and adhesives, which are tacky all the time.

No Toxicity Problem

In addition, the problem is made even more difficult by the fact that the rubbers frequently have no particular shape or rigidity and are characterized by rather high flow characteristics. Obviously, special problems such as these require solutions which differ from those employed in food packaging.

On the other hand, the choice of packaging materials and the choice of chemical treatments which can be applied to these materials is greater because no problem of toxicity is involved in industrial packaging. Occasionally, however, the transfer of deleterious substances from the packaging material can present a problem.

In considering the problems and methods of packaging tacky non-food products, the first task is to classify these materials. Such a classification is difficult because the field is so broad.

Natural and synthetic rubbers:

The packaging of synthetic rubbers for shipment to rubber processors has, for a number of years, been a very serious problem and in numerous cases, the problem is not yet solved. The two most common methods of packaging synthetic rubber are: bags, and corrugated, or solid-fibre, containers.

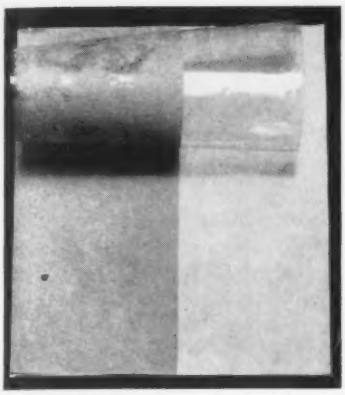
Need Fiber-Free Surface

The requirements of liners for bags or for boxes to prevent sticking are very different from those employed in packaging food products. Synthetic rubbers such as Neoprene, GRN and GRS, butyl rubber, and silicone rubbers, all have their own individual characteristics. Generally speaking, however, they do not contain any substantial quantity of either free moisture or free oil. Consequently, barrier properties are not too important.

By far the most important single requirement of packaging materials employed in this field is extremely low adhesion to this wide range of rubbers. The second most important requirement of these packaging materials is that they possess a hard fiber-free surface of such a nature that the rubbers themselves cannot flow around individual fibers and pull them free from the surface of the packaging sheet.

Must Have High Strength

High strength is another very important requirement in a release lining for bags. This is because bags of synthetic rubber are frequently stacked high and are often stored under conditions which are far from ideal. Storage temperatures can reach 100° to 140°F. in



DELAMINATION of fibrous surface of paper at left occurs when adhesive cellophane tape is removed; hard, dense, fiber-free surface of paper at right allows clean, easy release.

storage warehouses or freight cars, and this makes the rubbers more fluid. Due to the lack of rigidity of the rubber, substantial strains must be carried by the bags themselves.

Glueability is also very important. This is accomplished by applying the releasing treatment to one side of the paper and dry striping the treated side as well, so that the side seam can be glued successfully. Cost is still another important factor. The quantities of synthetic rubber bags and cases used in the course of a year are tremendous.

Use Clay-Coated Paper

Probably the most popular liner at present for bags and boxes for synthetic rubber, is ordinary paper coated with an extremely heavy layer of clay. When the rubber is stripped from this surface, a layer of clay adheres to the rubber. Effective release is accomplished, but the presence of clay in the rubber is sometimes objectionable.

Another solution along a similar line is to wrap the blocks of rubber first in polyethylene film, and then pack these blocks in cases. The polyethylene film is not tacky. When the rubber is used, no effort is made to remove the wrapper—it is simply milled in along with the rubber itself in the compounding operations. Unfortunately, in some types of applications, the presence of traces of polyethylene in the rubber is objectionable.

Two more recent candidates for this type of packaging are creped, release-treated vegetable parchment and silicone-treated kraft. The creped, treated vegetable parchment has considerable stretch, thus being able to stand the strains described earlier. The vegetable parchment also has good release characteristics. Silicone - treated krafts, on the other hand, have performed well on the less tacky rubbers.

"Dusting" Helps

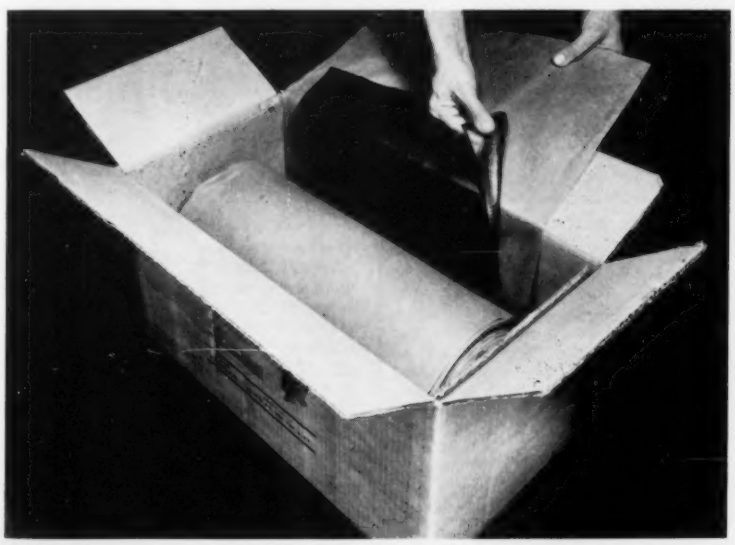
Although there might be some dispute as to whether packaging is the proper designation, some improved technique in the shipment of natural rubber in the holds of freighters from the Far East to Europe and the United States is still desperately needed. The common procedure is to bale the raw rubber and store these bales in the holds of ships. Unfortunately, due to the high flow characteristics of the rubber, the bales stick to the bottom of the ship and to each other. Consequently, some form of interleaving is necessary.

Talc has been used for years to dust each bale and to dust the bottom of the ship before the individual bales are stored. This is highly objectionable, however, during loading and unloading, from the standpoint of the people who must work in these conditions. Polyethylene film has been tried with some success as interleavers between bales. No effort is made to remove it from the bale. Silicone-treated kraft as well as specially treated and creped vegetable parchments are being tested at the present time. An interleaver of great strength and extremely good releasing characteristics is desirable.

Silicone rubbers present a special packaging problem because silicone-treated papers do not release readily from them. At the present time, polyethylene film is used to interleave slabs which are then packaged in boxes. Specially processed grades of vegetable parchment also function satisfactorily in this type of application.

Compounded rubbers:

Compounded rubbers are synthetic or natural rubbers to which tackifiers, plasticizers, fillers, antioxidants, and curing agents have been added. This class of product in its uncured state is tacky and often has more flow than the pure rubbers themselves. *(Turn page)*



INTERLEAVING rolls of calendered sheet rubber is effective in packaging this product.

For this class of compounds, the packaging material must have the following general properties:

1. A completely fiber-free surface;
2. Some oil barrier properties;
3. Excellent releasing characteristics;
4. Good strength and pliability.

In packaging this class of compounds, much more care is taken and the storage conditions are entirely different. Rarely are many packages piled on top of each other.

For Retread Rubber

One of the largest packaging outlets for releasing films in this class is for retread rubber or "camelback." The tire tread is extruded out and a more tacky rubber applied to one side. Embossed polyethylene film is used to cover this more tacky surface. Polyethylene film is almost ideally suited for this application because of the convex surface of the rubber. Good stretch characteristics are necessary for the backing film to form. Also, at a later step in the manufacture of camelback, the product is sprayed with water and polyethylene resists this well.

Another problem in the packaging of camelback is the covering of the fibreboard cores on which the rubber is wound, in order to prevent sticking. Materials used in this application include vegetable parchment, polyethylene-coated kraft, or silicone-treated kraft. Another packaging problem exists in the preparation of tire patches. Historically, these tacky rubber surfaces have been covered by Holland cloth or varnished cambric. In recent years, however, vegetable parchment has been used successfully.

Interleave Rubber Sheets

In the rubber industry, it is frequently necessary to mix or compound ingredients and then calender the rubber out in sheet form and ship it to another plant for further processing. Paper is used often to interleave the sheets of rubber. Vegetable parchment has been extremely successful in this application.

Another application is an interleaver for printing plate rubber, but in this case Holland cloth has retained its hold. Vegetable parchment, coated papers, and Holland cloth compete in the field of interleaving electrical splicing tapes. While Holland cloth has superior strength characteristics, parchment and coated papers have been used successfully as an interleaver on many types of tapes.

Generally speaking, packaging materials which have releasing properties on two sides are necessary for this class of compounds. Satisfactory materials are: Holland cloth, varnished cambric, specially treated grades of cloth, vegetable parchment, coated papers, and polyethylene. Krafts treated with silicone or sodium silicate have also been used.

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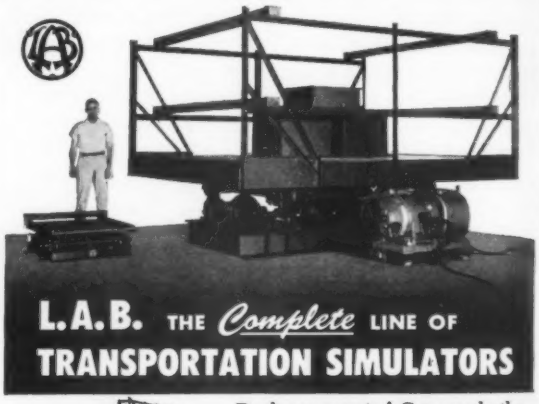

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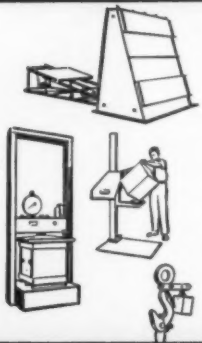

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DU PONT

PACKAGING TRENDS

Data of Interest to Package Engineers from Du Pont

Plax chooses ALATHON® for unusual conical blow-molded bottle and cap

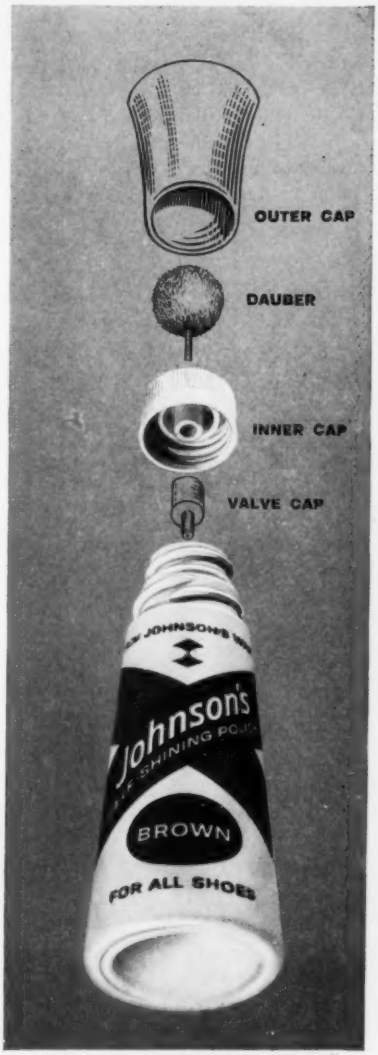
Johnson's Wax has entered the shoe-polish field with an outstanding and unusual new package—a conical polyethylene bottle. Functional as well as attractive, the new shape helps prevent tipping and is easier to hold in the hand. The bottle is blow-molded of ALATHON 20 and the inner cap is molded of ALATHON 34, by Plax Corporation, Hartford, Conn.

Working to solve the problem of applying hot-transfer labels to the conical shape brought about a new achievement. This hot-transfer labeling method is said to be the only one available which can apply a three-color label to such a shape at satisfactory cost.

Also of interest is the neck of the bottle, which has two adjacent sets of threads on its outer surface. The upper, smaller set holds the inner cap of ALATHON. (A groove in the cap and a bead molded into the bottle neck hold this cap tightly in place.) Then a flared outer closure engages the lower, larger set of threads to complete the package.

Du Pont ALATHON polyethylene resin is ideal for this package in many ways. It is light in weight, colorful and warm to the touch. It has excellent snap-back qualities, excellent resistance to environmental stress cracking, is tough and unbreakable. Both bottle and cap are easily molded and, because of outstanding chemical resistance, are unaffected by the contents.

This new Johnson bottle is another example of modern packaging design based on the versatility of ALATHON. You may find one of the many ALATHON polyethylene resins can easily and profitably solve *your* packaging problems. Find out how by filling in and mailing the coupon below.



S. C. Johnson & Son, Inc., of Racine, Wisconsin, has created an attractive and unusual package for its new line of shoe polishes. Both the inner cap and bottle are molded of ALATHON polyethylene resin.

Du Pont broadens family of ALATHON® resins with high-density 7000 series

The recently introduced series of ALATHON 7000 high-density polyethylene resins exhibits a new type of melt-flow behavior. These resins offer lower molded-in stresses than ever before available, with little or no warping of large-area or thin-walled moldings—a common problem with other high-density resins.

Low molded-in stress provides greater toughness and permits appreciably shorter molding cycles in many instances. And the ALATHON 7000 series come in a range of melt indices from 0.5 to 15.0. If you would like more information on this first of many new ALATHON polyethlylene resins, simply fill in and mail the coupon below.

POLYCHEMICALS DEPARTMENT

DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

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Firm Name _____ *Type of Business* _____

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For more information circle No. 259 on Reader Service Card

which have pressure-sensitive adhesive applied to them. It has always been necessary to protect the pressure-sensitive surface so that the product can be shipped and handled successfully. Consequently, we define this as a form of packaging.

Since adhesives are obviously designed to be sticky, it isn't surprising that this class of compounds is the most difficult to package successfully, and that the requirements of the packaging materials are extremely severe. They may be summarized as follows:

1. Hard, dense, continuous, smooth surface, no free fibers;
2. Very low adhesion—adhesion must not increase as time passes;
3. Good resistance against plasticizer penetration;
4. Packaging material or releasing paper must not affect adhesive in any way.

Pressure-Sensitive Products

The packaging of pressure-sensitive label stock is an excellent example of the problems encountered in this class of products. The adhesives on the pressure-sensitive label stock vary all the way from materials of mild tack to materials which adhere so tightly that the label, once applied, is completely destroyed if an attempt is made to remove it. Thus, it is necessary to protect the tacky surface until ready for use.

Other similar type applications are: the packaging of pressure-sensitive gaskets, core covers for winding pressure-sensitive tape, interleavers between rolls of pressure-sensitive tape during shipment, and interleavers for coated two-side pressure-sensitive tapes.

The packaging materials most widely used in these applications have historically been lacquered or varnished vegetable parchments, glassines, and kraft papers. In recent years however, specially treated vegetable parchments have also been used. In some cases, plastic films such as polyethylene are used because of inherent high strength characteristics. For similar reasons, Holland cloth, varnished cambric, and scrim, are used on medical bandages. A lamination of kraft paper and cellulose acetate has also been used on medical bandages.

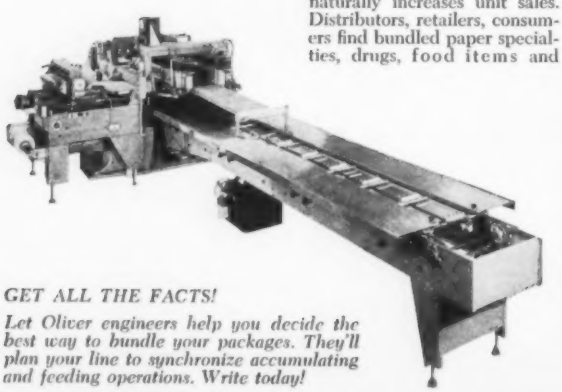
Unsupported Adhesive Films

In recent years, unsupported adhesive films which are used to splice paper to paper or to bond metal to metal, have been introduced and are gaining popularity. These adhesive films are tack free, but upon application of heat or solvents, they become sticky and function as excellent adhesives.

These adhesive films are prepared by casting the adhesive on special types of releasing papers and evaporating the solvent. Not only does the paper serve as a casting medium during manufacturing, but it also functions as a protective interleaver between layers of film in the package until the film is ready for use.

The requirements of releasing papers for this purpose are summarized below: *(Turn page)*

Step up sales,
cut labor costs...
bundle your packages
on the OLIVER



Overwrapping groups of packages into attractive bundles naturally increases unit sales. Distributors, retailers, consumers find bundled paper specialties, drugs, food items and similar articles easy to stock and handle.

The recognized quick-adjustability of Oliver wrapping machines makes them ideal for bundling. You can use almost any heat-sealing material: polyethylene, Vitafilm, cellophane, or other soft, plastic films. Choose endfold or underfold, overall or line bottom and end seals. Change for bundle size quickly. The Oliver can be supplied with interrupted bottom bar seal for easy opening. Even on short runs down-time is low. The exceptional range of sizes handled by the Oliver is another advantage.

Everybody goes for the new bundle of Pocket-Pack Kleenex containing eight units. The bundles please both eye and touch. They are neat and strong. For overwrapping a bundle of multiple units the Oliver wraps to sell and save!

GET ALL THE FACTS!

Let Oliver engineers help you decide the best way to bundle your packages. They'll plan your line to synchronize accumulating and feeding operations. Write today!

OLIVER MACHINERY COMPANY
PACKAGING DIVISION
Grand Rapids 2, Michigan

Molded by Monrovia Plastics, Monrovia, Calif.

New SUPER DYLAN® container keeps glass slides safe!

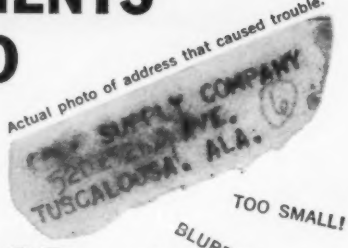
You can drop this plastic container on a concrete floor and the glass micro slides inside won't break. Precision-molded grooves hold the slides firmly in place; the heavily-threaded plastic cap screws tight keeping the slides from moving up or down. The container is lightweight, attractive and rugged. It won't chip or dent.

The new cylinder-type container is molded from SUPER DYLAN high-density polyethylene, a Koppers plastic. This container eliminates boxes and cotton cushioning materials, and the possibility of improper packaging. It is convenient to store, easy to ship, and it cuts mailing costs. In addition, SUPER DYLAN is heat resistant so that this container can be sterilized and reused if desired.

For more information on SUPER DYLAN high-density polyethylene, write Koppers Company, Inc., Plastics Division, Dept. PG110, Pittsburgh 19, Pennsylvania. Koppers also makes other fine plastics for packaging: DYLAN® polyethylene, DYLENE® polystyrene, and DYLITE® expandable polystyrene.

KOPPERS PLASTICS

MANY SHIPMENTS ARE DELAYED OR LOST... BECAUSE OF HARD-TO-READ ADDRESSES



WHY TAKE CHANCES? MARK THE ADDRESS BIG-CLEAR-PERMANENT-WITH A MARSH STENCIL

Rule 6 Marking Freight reads, "FREIGHT MUST BE STENCILED OR OTHERWISE PLAINLY AND DURABLY MARKED."
(TYPING WON'T DO IT—
MARSH STENCILING DOES!)

PLAINLY: LARGE AND CLEAR, READABLE FROM 10 FT.
DURABLY: REMAINS CLEAR AFTER REPEATED HANDLING OR WEATHERING.

1. Dense surface, impermeable to solvents;
2. Smooth surface:
3. Good heat stability and strength;
4. No contamination of the adhesive film;
5. Good stripping characteristics.

Several different types of papers have been used as the casting medium. A specially release-treated vegetable parchment which has been highly supercalendered and plasticized has proved successful in many cases. Kraft paper with polyethylene extruded on two sides, as well as lacquered two sides papers, are also being used.

Asphalts and modified asphalts:

Modified asphalts generally have some oil and plasticizer content along with other ingredients to make them soft and sticky. Compounded asphalts range all the way from relatively hard materials to those with a pasty consistency. Generally speaking, however, packaging mediums for this class of compounds should have excellent resistance to oil penetration, excellent heat stability and strength, and very low adhesion factors.

Roofing Shingles

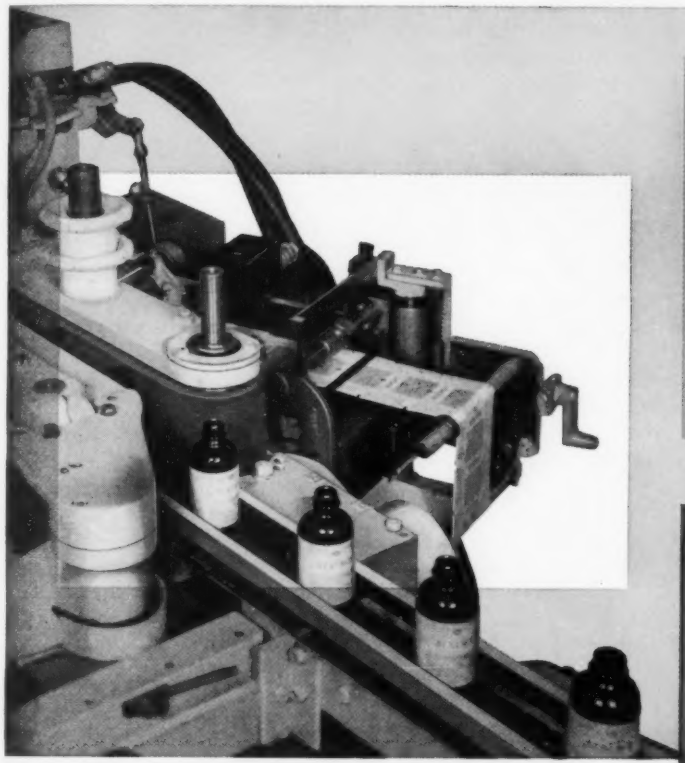
An interesting development of recent years is the manufacture of a special type of roofing shingle. At a certain point on the shingle, a layer of very tacky asphalt is applied to both sides of the shingle, and on one side a narrow strip of specially treated releasing paper is applied to cover just the tacky asphalt. This type of shingle may then be stacked and packaged in this form without fear of blocking.

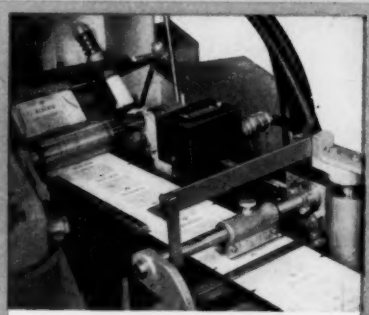
Still another packaging problem involving asphalt is the shipment of roofing compound in fibre containers. This is effected by coating the inside of fibre containers with a heavy layer of clay and then pouring in the asphalt. When the container is removed, the clay transfers almost completely to the asphalt, but in the roofing application this does not matter.

In all asphalt packaging applications, it is very important to make sure that the fibers of paper are

New roll feed "no glue" labeling

Automatic verification, coding, protection and control





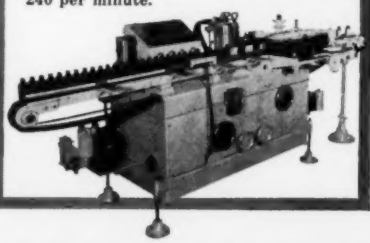
Shown here is the imprinting and coding head and electric eye controlled cut-off.

The Label-DRI Challenger complete with electric eye-controlled roll label feed. Speeds up to 120 per minute.

Also available:

The Semi-Automatic Pony Label-DRI. Speeds up to 60 per minute.

The Label-DRI Champion. Speeds up to 240 per minute.



Three New Jersey Label-DRI models now available

You get fast, fool-proof "no glue" labeling with these new roll feed Jersey labelers.

1 **Automatic label verification**—Once the first label has been checked, you know all other labels in the same continuous web must be the same.

2 **Automatic label coding** – Each label gets a clear imprint just before being applied to the container.

3 **"No-glue" labeling** – Labels in roll form are printed on thermoplastic label stock. You eliminate adhesive coating and are sure of more attractive label application.

4 **"Greater labeling efficiency"** – Eliminates mechanical separation of labels. No hopper to be set or reset to take care of label-cutting variations. No "doubling" due to "cling" caused by static electricity – ink offset – or dull cutting.

Check the Jersey Label-DRI that's best for you. Ask for details and a demonstration.

NEW JERSEY MACHINE CORPORATION

AUTOMATIC LABELING • CARTONING • PAPER BOX MACHINERY

FACTORY SALES AND SERVICE BRANCHES | 325 W. HURON ST., CHICAGO 10, ILL. 2500 W. 6th ST., LOS ANGELES 57, CALIF.

MAIN OFFICE & PLANT • 161st ST & WILLOW AVENUE, HOBOKEN N J

completely covered. If not, fiber "picking" is a certainty.

Synthetic resins and plastics:

Many synthetic resins, particularly of the thermosetting type, are tacky in their intermediate stage before cure is completed. Frequently, materials such as Fiberglas matting or various types of textiles are impregnated with these synthetic resins and then sold to fabricators across the nation. All the fabricator has to do is lay up the impregnated material into the proper shapes and complete the cure under pressure. Such a product is called "pre-impreg." All types of resins can be impregnated into cloth or Fiberglas. Some type of packaging material is required to interleave the rolls of impregnated material.

Polyurethane Foam

Another interesting packaging application for plastics occurs in the manufacture and shipment of polyurethane foams. Polyurethane foams are made by depositing a heavy blanket of foam in a mold which is lined with paper. The foam rises rapidly and cures. In order to protect the foam in its finished state, the paper used to line the mold is often left in contact with the foam, to act as its package, until the ultimate customer is ready to process the foam further. At this point the paper is stripped off.

In these applications, packaging requirements are relatively mild. A fairly effective releasing action is required, together with a fairly fiber-free surface. Polyethylene film, waxed kraft papers, greaseproof papers, and vegetable parchments, have been used very successfully for the foam application. Polyethylene in particular, has been used in the pre-impreg packaging application, as has creped, release-treated vegetable parchment.

Waxes and rosins:

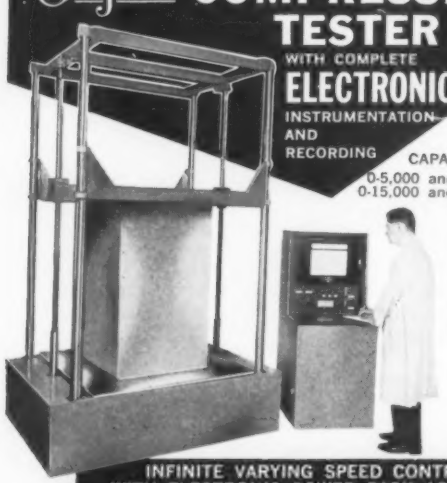
The packaging requirements for waxes and rosins are extremely mild. This is because the adhesive characteristics of these compounds are generally not very great. Very moderate resistance to penetration, such as can be obtained by simply using a dense paper, is often enough to solve most packaging problems.

Sticky Mainly When Hot

Frequently, this type of paper is laminated to the inside of the corrugated container in which the slabs of wax are packed. Sometimes it is necessary to use interleavers between the slabs of wax, but often this problem is solved by spraying the slabs with a thin layer of oil.

Both waxes and rosins are sticky mainly when hot. Under these conditions, a dense paper liner is sufficient to offer satisfactory release. Plain, untreated glassines, vegetable parchments, and supercalendered kraft papers are some of the materials used in these applications. *(End)*

Gaynes COMPRESSION TESTER
WITH COMPLETE ELECTRONIC INSTRUMENTATION AND RECORDING
CAPACITY
0-5,000 and 0-10,000
0-15,000 and 0-30,000



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• Permanent Chart Records
• No mechanical linkage to Master Console
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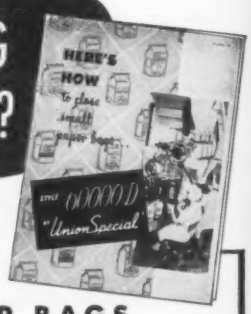
• No Counterweights

For complete information call or write
Gaynes ENGINEERING COMPANY
1644 W. FULTON ST., CHICAGO 12, ILL., HA. 1-5257

PACKAGING PROBLEMS?



HERE'S HOW *to close* SMALL PAPER BAGS

Send for this interesting, illustrated BULLETIN No. 100 showing how the Union Special *Style 60000 D* bag closing machine can help you solve many packaging problems:

- **FAST**—Speed to match output of standard filling and weighing equipment.
- **NEAT**—Produces an eye-pleasing sales-stimulating package with high merchandising value.
- **ECONOMICAL**—Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.
- **VERSATILE**—Adjustable for a wide range of bag sizes, short or long runs.

Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a *better* closing job for you.

Union Special® MACHINE COMPANY
487 N. Franklin St., Chicago 10, Illinois

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Circle No. 265 on Card

USE NIBROC® PRINT-PAK PACKAGING PAPER FOR FASTER SALES

One way for your product to make a quick, sure landing on kitchen shelves is to give your product faster recognition, faster sales with Nibroc PRINT-PAK packaging paper. Whether it is used for coffee, flour, cookies, dog food, or briquets—the whiter, brighter Nibroc PRINT-PAK can give your package that "stand out in the crowd" look.

The package, itself, is the best place to create that important first impression of all-around quality—so write *now* for samples and complete information about Nibroc PRINT-PAK to Dept. KR-11.

Another Quality Product of

BROWN COMPANY

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Mills: Berlin and Gorham, N. H.

ANNOUNCEMENTS OF MACHINERY AND PRODUCTS

1. Before each announcement headline is a code number. As you select items on which you want more information, *note* this number.
2. Now *circle* the corresponding numbers on the postcard inside the back cover
3. Next, *fill* in your name and address.
4. Then, *mail* the card—we pay the postage. For your convenience, we have also included addresses of suppliers so that you may write directly for more information.

1—Shock Tester

Announced is the development of a new shock testing machine for the drop testing of electronic devices and other fragile equipment weighing up to 150 lb. Machine will find fragility of product itself and can also be used to test ability of cushioning material to meet military and commercial specifications, the maker states. The shock testing machine measures 68x14x16 in. For more information write: Hardigg Industries, Dept. PE, South Hadley Falls, Mass., or *circle number on card.*

2—Easy-Open Can

Two new developments have been incorporated into a new type of can—a quick-opening

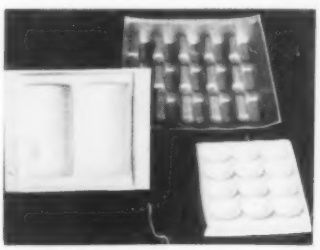
aluminum top on a foil and paperboard rigid container. Developed jointly with United Shoe Machinery Corp., the top consists of an aluminum tab, welded to the aluminum can end, which is pulled to remove the entire top. The tab has a loop finger opening and by lifting the loop and pulling, the tab tears out a thin scored strip of aluminum around the circumference of the top. The Safe Pack consists of a foil board lamination for the body with an overlap seam and features aluminum ends. For more information write: Aluminum Co. of America, Dept. PE, 1657 Alcoa Bldg., Pittsburgh 19, Pa., or *circle number on card.*

3—Selector/Counter

A new, fully automatic electronic selector and counter for conveyor line use optically selects and counts up to 31 different types of items for discharge and routing. Model 410-C photoelectrically recognizes different codes printed on containers and actuates the self-contained counting unit and conveyor switch control. Up to 31 different types of containers can be individually sorted and counted from one conveyor line. The simultaneous counting feature permits the unit to be used for inventory control purposes at the same time that selective routing is made, the manufacturer says. In addition to other applications, it may be used for sending different types of packages on a common conveyor to labeling machines, assuring that proper labels will be placed on each package. For more information write: Atronic Products Inc., Dept. PE, One Bala Ave., Bala-Cynwyd, Pa., or *circle number on card.*

4—Polystyrene Foam

Dyna-Foam is an extruded, low-density polystyrene foam which is available in sheet, film, lay-



flat tubing, pipe, board, solid rod, and special shapes. The developers claim it combines the properties of thermal insulation, resiliency, grease resistance, waterproofness, and is adaptable to decorative printing. The product may be glued or laminated to such materials as paper, paperboard, aluminum foil, Mylar, and polystyrene and may be heat sealed. The material is non-toxic, non-abrasive, non-linting, and chemically inert, the producer says. For more information write: Dyna-Foam Corp., Dept. PE, Ellenville, N.Y., or *circle number on card.*

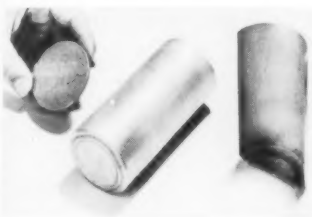
5—Thermoplastic Film

Arlite is a new form of extruded, expanded polystyrene film. This thermoplastic sheet material possesses many properties of mold polystyrene foam, according to the maker. The material may be formed with conventional vacuum or pressure forming equipment and may also be die cut.

Developers claim it is smooth, lightweight, tough, buoyant, and has a velvet-like texture. Pastel colors are available in addition to white. Heater temperatures from 400° to 1200°F. have been tolerated by the material. End uses include food bags, insulated tapes and linings, food trays and separators, insulated cups, and cushioning inserts and trays. For more information write: Applied Research and Development Corp., Dept. PE, 210 E. Columbia St., Chippewa Falls, Wis., or *circle number on card.*

6—Aluminum Can Press

A new machine is being manufactured for the impact extrusion of aluminum discs into cans



at speed up to 120 cans/min. Seamless aluminum cans are formed and delivered in an oriented manner ready for trimming, flanging, cleaning, coating, filling, and closing. The 300-ton impact extrusion Maxipres produces cans, which start as discs ⅜ in. thick and 2½ in. in diameter, with a height of over 5 in. as they emerge from the press and with an 11-oz. capacity. Maximum can size is 2¾ diameter by 6½ in. untrimmed height with a minimum wall thickness of 0.010 in. For more information write: The National Machinery Co., Dept. PE, Tiffin, Ohio, or *circle number on card.*

7—Hole Punch

The new Multiple Hole-Punch makes a full row of hang-up holes on skin-packaged master cards at one time. Minimum 2-in. spacing permits up to 16 simultaneous punches on a 32-in. skin or blister pack master card. Built-in guides on the punch table provide accurate placement of each master card and the unit features pneumatic foot pedal operation with adjustable punches. The machine is placed between the thermoforming equipment and the master card slitters. It requires a floor area of 36x32 in. For more information write: Abbott Plastic Machine Corp., Dept. PE, 7142 N. Clark St., Chicago 26, Ill., or *circle number on card.*

8—Corrugated Lap Adhesive

A new type of adhesive is being produced for use on equipment which forms corrugated containers with lap-type corner construction. According to the maker, the strength of the container is greater because stapling or taping of the side seam is eliminated. Fuller's No. 1593 glued lap adhesive, made from synthetic resins, is white in color and when dry is transparent. The manufacturer states that it has resistance to high and low temperatures, moisture, and rough handling. Also, the product sets quickly yet allows enough time for resealing if the bond is disturbed during forming on automatic equipment. The adhesive may be used on most standard case forming equipment. For more information write: H. B. Fuller Co., Dept. PE, 255 Eagle St., St. Paul 2, Minn., or *circle number on card.*

9—Labeling Machine

Model CK/MD has been designed for wrap-around or spot labeling of cans, glass, and aerosol containers. Capable of speeds up to 1,000 units/min., it is equipped with stainless steel paste belt which may be removed for cleaning and does not drag on labels during interrupted supply of containers, according to the producer. The paste pot is stationed on the operator's side of the machine for

NEW!

GENERAL'S

SEMI-AUTOMATIC

TAPE SEALER

MODEL STS SEMI-AUTOMATIC TAPE SEALER
$865 FOB
"BUY IT YOURSELF" PRICE
With "General's" feed-cut automatic taping head with doctored water roll. NO BRUSHES.
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1. Doubles production per man hour. Cuts labor costs in half.
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6. Single strip tape sealing wins user satisfaction because it is so easy to operate without injury to persons, contents or containers.

HOW IT WORKS. A touch of the foot switch automatically conveys a case to the work station. At the same time, the dispenser automatically delivers an exact length of moistened tape ready to hand seal the top flaps and extend over onto each end panel for the proper distance. Hitting the switch again repeats the cycle.

We offer this "BUY-IT-YOURSELF" economy price of $865. FOB if you mail or 'phone your order. You therefore save when we save selling costs. This offer may be for a limited time only. It costs to put off..

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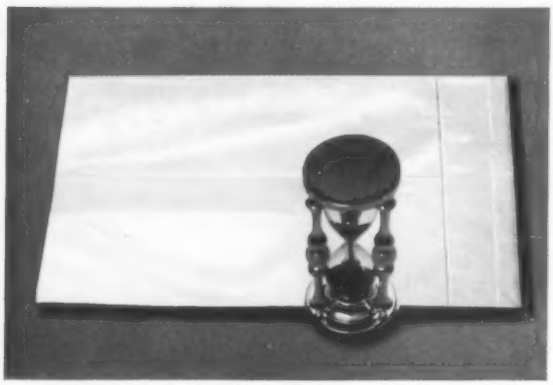
4 COMMON PROBLEMS IN MAKING WAXED GLASSINE BAGS

(and how the Arabol man helps you solve them)

1. THE BAG IS ODORIFEROUS—All right, it *smells*. An unpleasant situation, especially when the bag is used for packaging foods. If the adhesive is at fault, it's because the solvent is evaporating too slowly, leaving a residual odor. The solution? A fast-penetrating, quick-evaporating solvent system. The Arabol man will see that you get it.

2. THE ADHESIVE WON'T STICK—This may be due to an abnormally heavy coating of wax on the bag. Or a coating that has been modified for greater protection. The Arabol man may investigate: (1) How you're applying heat; (2) Ditto the adhesive; (3) Whether the wetting properties of the adhesive need improving; or (4) Whether you should switch to a suction type adhesive.



3. THE ADHESIVE IS SLOW DRYING—What happens when drying time is lengthened? Deliveries fall behind and customers become impatient. The problem can usually be traced to solvents or plasticizers that evaporate too slowly. Possibly, the use of a suction type adhesive is indicated. But why guess? The Arabol man is at your service. Call on him.

4. THE ADHESIVE "FILMS" TOO FAST—This can play havoc with your production. Lumps form on the roller, causing breaks in the paper roll. Or they may even be deposited on the glassine surface. Controlling bag quality becomes difficult and time and production losses mount. A *slow*-filming adhesive could pull you out. See the Arabol man.

THE BEST WAY to solve adhesive problems is to prevent them from happening. You can begin by telling us *all* the conditions your adhesive must meet—in your plant, in transit and after it reaches your customer. To help you understand these conditions more fully, we have prepared an interesting booklet that can save you no end of aggravation—and money. It's called "HOW TO BUY ADHESIVES—23 BASIC YARDSTICKS." Send for it today.

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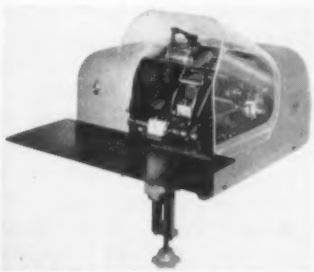
better access in filling and cleaning. It features an adjustable label box at each end, allowing for adjustment even when labels are trimmed crooked and self-leveling label beds which automatically compensate for varying thickness in label due to printing, both endwise and crosswise. The portable unit will handle label sizes from 1⅝ to 8-7/16 in. wide and 4-3/16 to 14¼ in. long on containers measuring 1½ to 4⅜ in. diameter and 1-15/16 to 8¾ in. high. For more information write: Crompton & Knowles Packaging Corp., Dept. PE, 100 Berkshire St., Holyoke, Mass., or *circle number on card.*

10—Imprinting Machine

Parts and containers of virtually any size, shape, or material may be marked at average speeds up



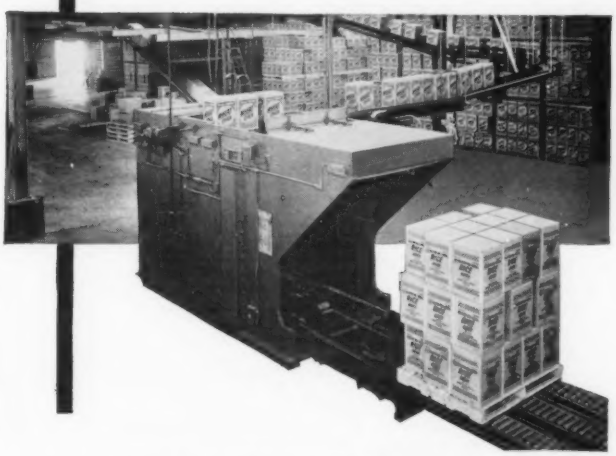
to 3,100 objects/hr. on the new Model 148A direct-offset machine, according to its producer. With no hand rolling or pressing, the machine automatically places imprints up to ¾x¾ in. on such surfaces as flat, curved, irregular, corrugated, etc. The unit may be bench mounted for in-line marking of items carried by conveyors or dial feed, or hand fed. Fitted with solid printing plates, imprint data is changed by inserting a new type block in the plate. For more information write: Markem Machine Co., Dept. PE, 150 Congress St., Keene 35, N.H., or *circle number on card.*

11—Plastic Netting

A new method of processing is now being used to extrude and

MECHANIZE... PROFIT-WISE!

...with a LAMSON AUTOMATIC PALLET LOADER



Palletizes cartons, cases, rigid bags quickly, economically

Referred to as the "perfect link between packaging and warehousing," the LAMSON AUTOMATIC PALLET LOADER is acclaimed as a huge, money saver by leading producers of package products.

Man hours per pallet load are cut. Considerable saving occurs in the reduction of damage or breakage to cartons. Valuable men are freed for other important duties.

These reductions have been more than enough to amortize the entire cost of the LAMSON AUTOMATIC PALLET LOADER.

The introduction of the Automatic Pallet Loader was another LAMSON first in the materials handling field. A result of the ceaseless engineering vitality of LAMSON men firmly based upon 75 years of experience.

Why not bring your materials handling problems to the leaders in the field? Write LAMSON today for the name of your nearest Field Engineer. Or, simply clip this advertisement to your letterhead and mail to:

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1109 Lamson Street, Syracuse 1, New York

PLANTS IN SYRACUSE AND SAN FRANCISCO • OFFICES IN ALL PRINCIPAL CITIES

Manufacturers of Airtube® (Pneumatic Tube Systems) • Integrated Conveying Systems • Pallet Loaders • Selective Vertical Conveyors • Bookveyors® Clinical • Trayveyors® • Food Service Systems • Blowers and Exhausters • Exidust® Central Vacuum Cleaning Systems • Dryset® Air Vacuum Systems

Reduce packaging and shipping costs with

MID-STATES® fast, trouble-free STITCHING WIRE

Boxes and shipping containers of fibre or corrugated materials can be stitched or stapled faster, more dependably with free-flowing Mid-States Stitching Wire. Never clogs stitching head because it has no raw edges; never flakes. Comes in 5, 10, 25 and 50-lb. coils.

Furnished flat and shaped in all standard sizes (special sizes available), with galvanized or coppered finish.

5-lb. Spools
Packed 10 Spools per carton.

10-lb. Spools
Packed 6 spools per carton.

25-lb. Spools
Packed 4 spools per carton.

50-lb. Spools
Packed 20 spools per pallet.

STITCHING MACHINES in a variety of models also available from Mid-States. Head sizes range from 12 to 36 in.; capacities up to 375-point (⅜") board; with Electric Solenoid Trip if desired. Lease or sale agreements available.

ROUND STEEL STRAPPING and MACHINES

For binding and reinforcing bales, bundles or boxes.

Strapping in wide variety of gauges, galvanized or coppered, in quantities from 5 to 500 pounds.

Machines on lease or sale agreements.

WRITE today for further details, catalog sheets, samples and prices.

MS SW MID-STATES STEEL & WIRE COMPANY

MID-STATES STEEL & WIRE COMPANY
CRAWFORDSVILLE, INDIANA • JACKSONVILLE, FLORIDA

die-form polyethylene netting. Standard flat width is 36 in. and mesh size is 1x1¾-in. diamonds, but a variety of sizes and mesh weaves are available as well as various filament thicknesses. When laminated to kraft paper on one side and polyethylene film on the other side, the material provides a container for heavy-duty packaging. According to the maker, it prevents tearing and provides a moisture barrier. Material is supplied as a flat netting in catch weight rolls of approximately 100 ft. with a standard or special selvage edge and may be had in various colors. For more information write: Nalle Plastics, Inc., Dept. PE, 108 W. Second St., Austin 1, Tex., or *circle number on card.*

12—Plastic Jars

Available is a new heavy-wall cosmetic jar made of polystyrene with a closure of the same material. For positive sealing, the closures are fitted with a pulp and vinyl liner. The tapered jars are available in 1, 2, and 4 oz. capacities and are carried in stock in white opaque, although standard colors can be supplied. The jars may be multi-color printed in the manufacturer's plant. For more information write: Celluplastic Corp., Dept. PE, Federal Trust Bldg., 24 Commerce St., Newark 2, N.J., or *circle number on card.*

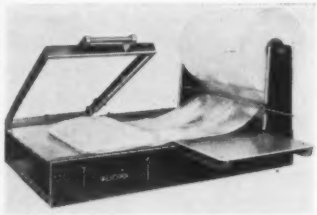
13—Dual-Head Stapler

A new adjustable dual-head wire stitching machine which makes and inserts two staples simultaneously from coils of wire has been developed for fastening materials up to ⅝ in. thick. Heads may be adjusted from 3¾ in. center to center of staples, to 9 in. The machine is portable and has a throat depth of 10 in. Two coils of wire will make approximately 120,000 staples before reloading. The wire used is stocked in 28 different gauges of both round and flat in standard fin-

ishes and colors. The machine may be actuated by either a foot switch or a Micro Switch and is available with single-trip or multiple-trip clutch. For more information write: General Staple Co., Dept. PE, 28 E. 22nd St., New York 10, N.Y., or *circle number on card.*

14—Heat-Seal Machines

A machine has been developed for the thermal impulse sealing of polyethylene film directly



from roll stock. The "L" Series Mult-Sealers are bench mounted, adjustable, portable, and is equipped with cycle timers. The machine makes a polyethylene bag directly around the product in one operation and will handle printed or plain film. Models are available in several sizes and table area requirement is approximately 24x36 in. For more information write: Weldotron Corp., Dept. PE, 841 Frelinghuysen Ave., Newark 12, N.J., or *circle number on card.*

15—Polyethylene

Available are 15 new formulations of low- and medium-density polyethylene. Dylan 1350 is recommended for extremely fast flow injection molding; Dylan 2012 and 2020 for use where additional stiffness is required for molded parts; and Dylan 2025, 2027, and 2029 are resins for producing clear films by blown-film extrusion. Dylan 2038 is recommended for clear films also, but is not designed for chill-roll extrusion. Other grades of plastic have been tailored for injection molding, for the production of closures for cans and bottles, as well as for pres-

SYNTRON cost-cutting equipment of proven dependable Quality

feeds bulk materials at high rates

SYNTRON *Vibra-Flow*

VIBRATORY FEEDERS

—help reduce processing and packaging costs.

First, by dependable flow feeding of material to process equipment.

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Third, by simplicity of design. The powerful electromagnetic drive assures long, trouble-free service with low maintenance costs.

Install SYNTRON Vibratory Feeders for efficient, dependable, low cost handling of all your bulk materials.

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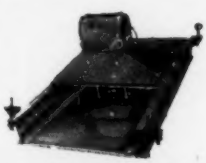

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speeds packaging

cuts cleanup

saves money

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silicone release agent

"wherever sticking is a problem"

SLIPICONE® goes on in a breeze . . . makes any surface slick . . . keeps adhesives, packaging materials and foods from sticking or piling up where you don't want them . . . keeps equipment cleaner, more sanitary . . . assures neat, attractive packages and labels.

SLIPICONE is nontoxic . . . safe to use in contact with all foods. Stays effective over a broad temperature range . . . from 40 below to 400 above zero!

SPRAY OR WIPE IT ON

SLIPICONE comes in four handy sizes: 12 oz. aerosol can; 2 and 8 oz. tubes; 10 lb. can . . . all economical to use.

Get SLIPICONE from your paper merchant, packaging materials supplier, or write Dept. 6411 for name of nearest distributor.

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MIDLAND, MICHIGAN

sure buttons on aerosol cans. For more information write: Koppers Co., Inc., Plastics Div., Dept. PE, Pittsburgh 19, Pa., or *circle number on card.*

16—Feed Rollers

New air-pressure controlled feed rolls reduce jam-ups at bag machine feed stations caused by uneven pressure on paper rolls, according to the manufacturer. The device allows the machine operator to maintain constant pressure throughout the roll because the feed rolls automatically compensate for variations in paper caliper. On bag making machinery, it equalizes pressure on the entire surface of the bag to prevent marring. The new unit is included as standard equipment with Potdevin bag machines. Kits are available for machines in the field to convert mechanically adjusted feed rolls. For more information write: Potdevin Machine Co., Dept. PE, 221 North St., Teterboro, N.J., or *circle number on card.*

17—Electric Stapler

A new single-head portable electric stapler has been announced. Designated Model S-

700-1, the machine is operated on a solenoid and the new power drive principle permits center stapling of multi-page folders and booklets as fast as they are fed into the machine. Another improvement, according to the maker is the adjustable stapling depth which can be set with a turn of a knob from a depth of ⅜ to 9¼ in. Foot pedals and

hand controls have been eliminated and the machine holds 210 standard preformed staples from the front. For more information write: The Staplex Co., Dept. PE, 777 Fifth Ave., Brooklyn 32, N.Y., or *circle number on card.*

18—Printed Poultry Bags

Newly designed is a poultry bag and matching overwrap material which are flexographically printed in a white, brown, and yellow motif. Stock packaging materials include 4⅛x3⅛x13-in. side-gusseted polyethylene bags and matching 15x15-in. cellophane sheets for overwrapping cut-up fryers. Closure of the bag is by plastic ties while the cellophane is heat sealed. For more information write: The Dobeckmun Co., Div. of The Dow Chemical Co., Dept. PE, Cleveland 1, Ohio, or *circle number on card.*

19—Moisture Tester

A new moisture test meter has been introduced to detect penetration of water through various barrier materials used in packaging. The portable, self-contained instrument offers protection from meter burn-out caused by accidental contact of the test leads with each other. It features a voltage calibration that tells when the battery should be replaced. For more information write: Rutherford Research Products Co., Dept. PE, P.O. Box 162, Rutherford, N.J., or *circle number on card.*

20—Jar Discs

A varied line of protective vinyl discs is being offered for cosmetic jars. Designed to prevent the product from transferring to the inside of the screw cap, these discs also retard evaporation. Discs with grooved edges for close contact to jar rim may be embossed with brand name. Flat vinyl discs come with or without tabs for easy removal and may be printed. For pressed powder containers, printed or

the HAYSSEN
ACCUMULATOR • BUNDLER
can save you 88% and more
Vitalis
Cost of 5" x 8" x 10" chipboard carton printed in one color and purchased in 500 M quantity $0.035
Cost of Kraft paper for bundling product of the above dimension printed in one color by a Hayssen printer attached to paper roll stand $0.004
Total material savings of 88%

Typical installation of a Hayssen Accumulator and Bundler.

Compare your present packaging costs with these low Hayssen costs. Add further savings from substantially reduced labor needs, better product protection and faster production and you will see why hundreds of progressive manufacturers all over the world are changing to Hayssen Get the full story. Write today.

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plain acetate and cellophane discs are also available. For more information write: Busse Plastics Co., Dept. PE, 64 E. 8th St., New York 3, N.Y., or *circle number on card.*

21—Beverage Pack

For use in the beverage packaging industry, the BWP Twelve-Pak has been introduced to provide a convenient carrying case holding two standard soft drink six-packs. The container may also be provided with slotted partitions for filling at the bottling plant or to replace the standard six-pack containers. Constructed of bleached kraft corrugated, the container is supplied flat and may be set up on most standard carton forming machines. The strip-steel handle is manually inserted, but requires no special equipment. Its developers say the container averages over 12 trips. Two of the packs will fit into existing standard wooden cases designed to hold 4 six-packs. For more information write: Bertram Wire Products, Inc., Dept. PE, 41 Carroll St., Buffalo 3, N.Y., or *circle number on card.*

22—Bacon Cartoner

A new 1-lb. bacon carton packaging system has been developed. Major features of the unit according to the developers are that after adhesive is applied to the carton, no additional heat or refrigeration is necessary to insure positive fiber tear seal of the end flap, the cartons are carried instead of being dragged to reduce scuffing, it has a short compression section, and is capable of handling up to 40 cartons/min. The unit was developed in conjunction with Thiele Packaging Machinery Co. The new type of carton used on the equipment features squared edges, a slide-out tray containing the sliced bacon, and a reclosable flap. For more information write: Container Corp. of America, Valley Forge Marketing & Research Center, Dept. PE, Oaks, Pa., or *circle number on card.*

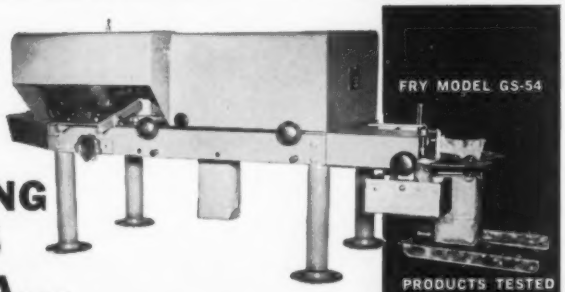
23—Wax Melting Tanks

Available is a new line of electrically heated wax melting tanks with capacities from 5 to 295 gal. All sizes feature a fusible link closing device for the cover to reduce fire hazards, dial-type thermometers, automatic thermostatic control, and a full-flow drain valve. The tanks are suited for melting waxes, pitches, plastics, resins, thermoplastics, and other similar compounds. The tanks may also be used for dip coating machine parts for preservation storage with plastic compounds. For more information write: Aeroil Products Co., Inc., Dept. PE, 9 Wesley St., South Hackensack, N.J., or *circle number on card.*

24—Bottle Carton/Machine

Being marketed is the new Andre-Matic 6-pack wrap-around carton for no-return beverage bottles. Two carton styles are available. The first features built-in separators for the bottles, eliminating the necessity for an extra board insert and inserting machinery. Top and bottom are solid—no locks or gluing are necessary. The second style eliminates the board separators, yet holds the bottles tightly in position through its crown lock and bottom-of-bottle separating tabs, according to the maker. The crowns and necks of the bottles in both types of cartons are covered to provide a solid surface for in-store stacking. Two models of machines for cartoning are available and will package up to 50 bottles/min. automatically. Machines and cartons are offered for use with 11, 12, or 16 oz. bottles. For more information write: Weyerhaeuser Co., Boxboard and Folding Carton Div., Dept. PE, 919 N. Michi-

SOLVE YOUR BAG CLOSING NEEDS WITH A...



FRY machine

Model GS-54—Continuous motion Master Bag Closer. Heat seals, glues or both. Extra strong, sift-proof closures on plain, coated or lined paper bags.

Model CBS—Single or double folds and heat seals many heat sealable paper bags.

Model CBG—Makes flat top bag closure as for coffee bag. Automatic operation. Heat seals, folds, glues.

Tommy Tucker—Feeder for CBG. Fully automatic from filler to shipping case. Tucks gussets.

Model V-30—Vibrating conveyor to settle product. Will feed Tommy Tucker. Adjustable lengths.

Model CSG—Sealer—gluer for automatic, square and flat paper bags. Handles to 20 lbs.

Free literature available on all Fry Machines.

PRODUCTS TESTED AND PROVEN:

- All Powder or Granulated Products
- Briquets
- Cement Paint
- Chemicals
- Cocoa
- Coffee
- Cookies
- Corn Meal
- Dog Food
- Dried Fruits
- Fertilizers
- Flour
- Grain
- Insecticides
- Milk Powder
- Mixes
- Plant Foods
- Pop Corn
- Potato Chips
- Rice
- Seed
- Sugar
- Wheat Paste

GEORGE H. FRY COMPANY

42 East Second Street, Mineola, N. Y.—Pioneer 6-6230

gan Ave., Chicago 11, Ill., or *circle number on card.*

25—Multiwall Sacks

Polyethylene and paper construction is the feature of a new line of moisture resistant, multiwall shipping sacks. Named the Poly-Ply multiwall, the bag features a multiwall structure that includes a separate, intermediate ply (not a liner) of lightweight sheet polyethylene, spot pasted at top and bottom to adjacent layers of heavy-duty kraft paper. The maker claims that this construction protects the film from abrasion and other mechanical injuries from the bag contents as well as from the outside, thus offering greater moisture-barrier qualities in a flexible package. Standard sizes are 25, 50, and 100 lb. with either sewn-open mouths or sewn-valve closures. For more information write: Chase Bag Co., Dept. PE, 355 Lexington Ave., New York 16, N.Y., or *circle number on card.*

26—Staple Remover

For removing heavy-duty staples from shipping containers and other stapled items, the

G7W staple remover has been designed. By inserting the steel base blade under the staple and working the tool back and forth, a slight downward pressure on the handle frees the staple. The tool is particularly suited for removing wide-crown staples, the maker states. For more information write: Bostitch, Inc., Dept. PE, 868 Briggs Dr., East Greenwich, R.I., or *circle number on card.* *(End)*

It can't be just "adequate"...

PACKAGE MARKING

either makes money or wastes it

Readable, attractive marking made by Markem machines on your boxes or labels helps them from the moment they're marked to the time they're used — and can even help future sales as well. Good marking speeds handling . . . reduces waste and packing errors . . . allows quick selection by customers . . . simplifies and encourages reordering . . . carries the "quality" message of modern package design.

In contrast — *hard-to-read, uneven, "home-made" marking is a hindrance to your package or product from beginning to end* — and can actually waste thousands of dollars a year.

And a Markem marking method makes important "in-plant" savings as well. The right Markem machine, type and specialty ink working in your plant marks the *right* quantities at the right time — with savings in inventory, labor and delivery time . . . eliminates waste from obsolescence . . . handles "short runs" rapidly and economically . . . provides flexibility that allows *one machine to do a variety of marking jobs.*

Call your local Markem man or write directly, enclosing samples and requirements. Markem Machine Co., Keene 35, N. H.

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everything industry needs . . . for profitable marking . . . since 1911

2 HANDS and these 2 HEADS

ANSWER MANY CLEANING NEEDS

• FLOOR MODEL

One operator can easily air clean new glassware on this machine at a 20 to 50 per minute clip. With a bottle in each hand, necks inserted in the nozzles, a slight downward pressure releases a blast of filtered air at 60 pounds pressure. All foreign matter is shaken free and falls out of the container by gravity.

Cleaning heads operate independently for single cleaning of large containers—up to one gallon size. Several container shapes and sizes can be handled without changing parts. Here's the low cost way to boost your production efficiency. Get all the details—mail the coupon.

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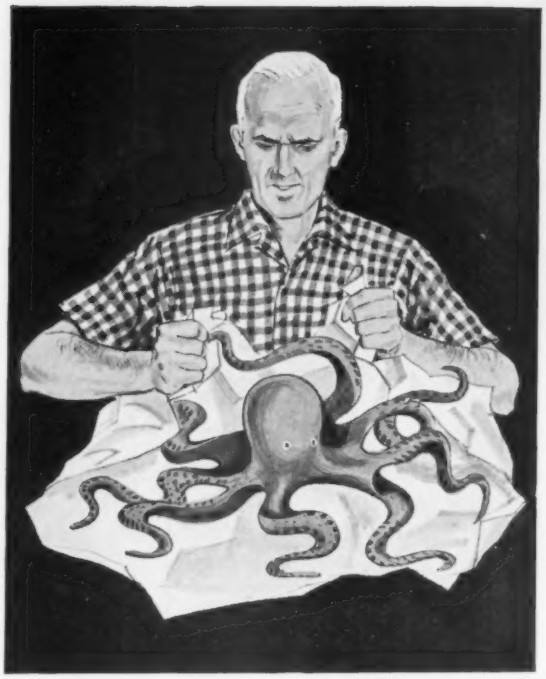
77 Newport Avenue, Quincy 71, Mass. *Branches, Chicago and New York*
Please send us complete information on 2 Head Air Cleaner.

NAME _____ Position _____

COMPANY _____

ADDRESS _____



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This man has a problem, but that's nothing new to men in the packaging field.

More and more packaging men are discovering Crystal makes tough tissues that can be handled, printed, sealed—do most anything that costlier papers, foils, films or fabrics can do.

Crystal tissues are now universally used because they can be stitched, twisted, laminated, impregnated, or what have you. Whatever your problem, chances are Crystal has or can develop the tissue you need.

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Crystal®

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The Crystal Tissue Company, Middletown, Ohio

I want samples and more information on Crystal Tissues for special applications. PE 1160

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For your convenience, we have also included addresses of suppliers so that you may write directly for more information.

101—Steel Strap Binder

A bulletin on the Model 1930 Strapbinder pneumatic stretcher for applying flat steel strapping from vibrated wound coils has been published. For more information write: A. J. Gerrard & Co., Dept. PE, 400 E. Touhy Ave., Des Plaines, Ill., or *circle number on card.*

102—Paper Tubes/Cores

"Quickly 2 Minute Tube Tour" is a 10-page pamphlet furnishing information on the manufacture of spiral-wound paper tubes and cores, some uses, and specialty items available. For more information write: J. C. Baxter Co., Dept. PE, P. O. Box 180, Minerva, Ohio, or *circle number on card.*

103—Transparent Packages

An 8-page illustrated booklet gives detailed information on custom-designed and standard packaging items made from transparent and opaque plastics. Blister packages and slide-cover boxes are shown. For more information write: Plastic Artisans, Inc., Dept. PE, Dock St. & Martin Pl., Port Chester, N.Y. or *circle number on card.*

104—Transferring System

Descriptive information is available on an air-automation system for transferring materials from one location to another. Pedco air jets may be used to convert existing machines, conveyors, and tables into air carrier units. For more information write: Paper Equipment Distributing Co., Dept. PE, P.O. Box 90, Prince St. Station, New York 12, N.Y., or *circle number on card.*

105—All-Fibre Drum

A brochure is available on a fibre shipping drum with resin plastic-laminated fibre cover and bottom that accommodates shipping weights up to 550 lb. Container is called the Greif "FF" Lok-Rim fibre drum. For more information write: Greif Bros. Cooperage Corp., Dept. PE, 2012 W. 25th St., Cleveland 13, Ohio, or *circle number on card.*

106—Protective Wrap

Technical data are presented on the Daubrite wrapper, a chemically-treated paper which prevents tarnish and oxidation of copper, brass, bronze, and cadmium. For more information write: Daubert Chemical Co., Dept. PE, 4700 S. Central Ave., Chicago 38, Ill., or *circle number on card.*

107—Wrap-Around Cartoner

Literature is available on automatic packaging machinery which starts operation with a supply of flat, precut, and scored carton stock and builds the container around the product, seals it, and automatically palletizes them. For more information write: Metro Tool & Engineering Corp., Dept. PE, 3301 E. 26th St., Minneapolis 6, Minn., or *circle number on card.*

108—Blow-Mold Containers

A brochure presents information on this company's blow molding facilities for producing various sized bottles ranging from 12 oz. to 5 gal. For more information write: Hydrocarbon Chemical Co., Inc., Plastics Div., Dept. PE, P.O. Box 268, Farmingdale, N.J., or *circle number on card.*

109—Machine Cams

A brochure contains specifications and drawings for several types of cam blanks which may be adapted for specific machine applications. Cam blanks are available in a variety of metals. For more information write: Stelron Cam Co., Dept. PE, P.O. Box 418, Hackensack, N.J., or *circle number on card.*

110—Protective Packaging

A specification sheet enumerates the various grades of Kushion-Kraft available in sheets and rolls. Material consists of plies of processed and corrugated paper in either kraft or tissue, or a combination of both. For more information write: Jiffy Mfg. Co., Dept. PE, 360 Florence Ave., Hillside, N.J., *or circle number on card.*

111—Package Caser

A 4-page bulletin, No. CMD 601-W, gives specifications for and pictures of the Sure-Way package caser. Machine can load rigid or semirigid packages into a variety of corrugated case sizes. For more information write: Food Machinery & Chemical Corp., Canning Machinery Div., Dept. PE, San Jose, Calif., or *circle number on card.*

112—Self-Sticking Tapes

In a 44-page booklet, 80 packaging ideas using self-sticking tapes are pictorially demonstrated. A list describes 37 packaging tapes, 9 of which meet government specifications. For more information write: Permacel, Dept. PE, U.S. Hwy. No. 1, New Brunswick, N.J., or *circle number on card.*

113—Counter/Coder

Two pieces of literature describe the Tickometer, a machine designed to automatically count, date, code, and imprint labels, tags, cartons, etc. at speeds from 500 to 1,000 pieces/min. For more information write: Pitney-Bowes, Inc., Dept. PE, 7734 Walnut St., Stamford, Conn., or *circle number on card.*

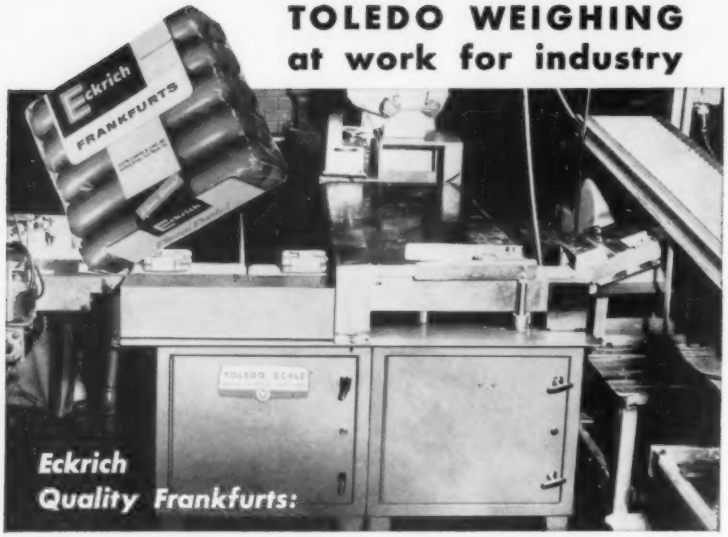
114—Automatic Filler

A descriptive catalog is available on a high-speed automatic filler for free-flowing products. Information is given on speed, control, types of equipment for accurate fill of small containers, etc. For more information write: Bartelt Engineering Co., Dept. PE, 1900 Harrison Ave., Rockford, Ill., or *circle number on card.*

115—Vacuum Former

The Comet Star is a vacuum forming machine described in a bulletin being offered. Plastic sheet forming,

TOLEDO WEIGHING at work for industry



How TOLEDO Automatic Checkweighing assures accurate package weights, speeds production!

With the squeeze on meat packing profits, the drive for lower costs and better efficiency never ends. Peter Eckrich and Sons, Fort Wayne, Indiana, is a case in point.

ECKRICH has installed a Toledo 9457 Checkweigher (shown above) to automatically (1) weigh each 1 lb. package of frankfurts, (2) reject those over or under a tolerance zone within an accuracy of 1/32 oz., and (3) count the o.k.'s, overs and unders. This Toledo's accuracy and dependability enable Eckrich to report average production through the checkweigher at 55 packages per minute. And the o.k., over and under count guides the stuffing operation to assure most uniform control of frankfurt weights.

TOLEDO 2151 FLOOR SCALES in Eckrich's shipping room help fill salesmen's orders on a production basis. Each scale has an input station for imprinting the route number; a control station for taring of weight of the rack. Even though the items making up the order are loaded on the rack cumulatively, each item is automatically listed on the tape at its net weight.

In Eckrich's shipping room three Toledo 2151 Floor Scales are equipped to transmit weights to machines that list individual weights of items on tape as racks are loaded, giving both speed and accuracy in filling orders beyond any method previously used.

Toledo Scale engineers will assist you in developing more efficient, cost-saving weighing methods, based on the wide selection of Toledo industrial scales, or development of modifications or custom engineered units for your needs. Write and tell us about your problems. TOLEDO SCALE, Toledo 12, Ohio, Division of Toledo Scale Corporation. Toledo Scale Company of Canada, Ltd., Windsor, Ontario.

SERVICE Factory-Trained 240 Cities

TOLEDO® *headquarters for weighing systems*

• FLOOR AND TRACK SCALES • BENCH AND PORTABLE SCALES • OVER-UNDER SCALES • WEIGHT PRINTING • OVERHEAD TRACK SCALES • COUNTING SCALES • TRUCK SCALES

straight drape and vacuum forming, inverted drape and vacuum reverse, and ring and punch forming are some of its applications. For more information write: Comet Industries, Dept. PE, Franklin Park, Ill., or *circle number on card.*

116—Aerosol Gasser/Shaker

Circulars are available on two aerosol gasser and shaker machines. Model 12GS is fully automatic and Model 8GS is semiautomatic. For more information write: John R. Nalbach Engineering Co., Dept. PE, 6139 Ogden Ave., Chicago 50, Ill., or *circle number on card.*

117—Cellophane Data

To describe properties and uses, a partial listing of over 100 varieties of cellophane is presented in Bulletin A-12546. Forms listed include such grades as polymer-coated, moisture-proof, heat sealing, plain films, etc. For more information write: E. I. du Pont de Nemours & Co. (Inc.), Dept. PE, Film Dept., Wilmington 98, Del., or *circle number on card.*

118—Bulk Liquid Container

A 4-page brochure presents the Cubitainer. A non-returnable package designed to handle bulk liquids, it is composed of two parts: a semi-rigid molded plastic liner that is inserted into a cube-shaped corrugated container. For more information write: Hedwin Corp., Dept. PE, 1600 Roland Heights Ave., Baltimore 11, Md., or *circle number on card.*

119—Molded Cushion Paper

A 16-page illustrated booklet tells of Shocksorb, a molded cushioning paper. Advantages and comparative costs are described for packaging drugs, cosmetics, instruments, metallic finishes, etc. For more information write: Kieffer Paper Mills, Dept. PE, Brownstown, Ind., or *circle number on card.*

120—Cartoning Machines

Various types of packaging machinery are described in an 8-page catalog, including equipment for carton forming and lining, carton folding and closing, and carton and tray forming and gluing. Carton sizes, machine specifications, and installation floor plans are presented. For more information write: Peters Machinery Co., Dept. PE, 4700 Ravenswood Ave., Chicago 40, Ill., or *circle number on card.*

121—Burst Strength Testers

Seven different models of the Mullen tester are listed on an information sheet. Instrument determines

lb./sq. in. bursting strength of sheet materials such as paper, corrugated, solid fibreboard, and plastic films. For more information write: B. F. Perkins & Son, Inc., Tester Div., Dept. PE, Box 388, Holyoke, Mass., or *circle number on card.*

122—Liquid Fillers

Bulletin No. 155 is a digest of 13 models of fillers for still liquids or semi-liquids. Equipment will handle containers ranging in size from 1 oz. to 5 gal. For more information write: Horix Mfg. Co., Dept. PE, Corliss Station, Pittsburgh 4, Pa., or *circle number on card.*

123—Box Lidder

A data sheet describes operating features of a set-up box lidder which automatically places lids over filled box bases. The portable unit handles box sizes from 1¼ x 1¼ x ¼ to 22x14x4½ in. and it has a variable speed drive. For more information write: Charles Beck Machine Corp., Dept. PE, Church Rd., King of Prussia, Pa., or *circle number on card.*

124—Carton Marking

In a booklet, 24 pages cover the following subjects: How to save on sealing cartons with gummed tape; proper inks to use for all kinds of marking; brush, roller, and spray stenciling; and data on marking packages for export. For more information write: Marsh Stencil Machine Co., Dept. PE, Belleville 34, Ill., or *circle number on card.*

125—Strapping Tapes

Samples are offered and a folder gives physical characteristics and performance test results on 2 grades of self-sticking strapping tapes. One is made of glass-filament reinforced paper and the other features woven glass backing laminated to Mylar. For more information write: Shuford Mills, Inc., Dept. PE, 15th St. & Highland Ave., Hickory, N.C., or *circle number on card.*

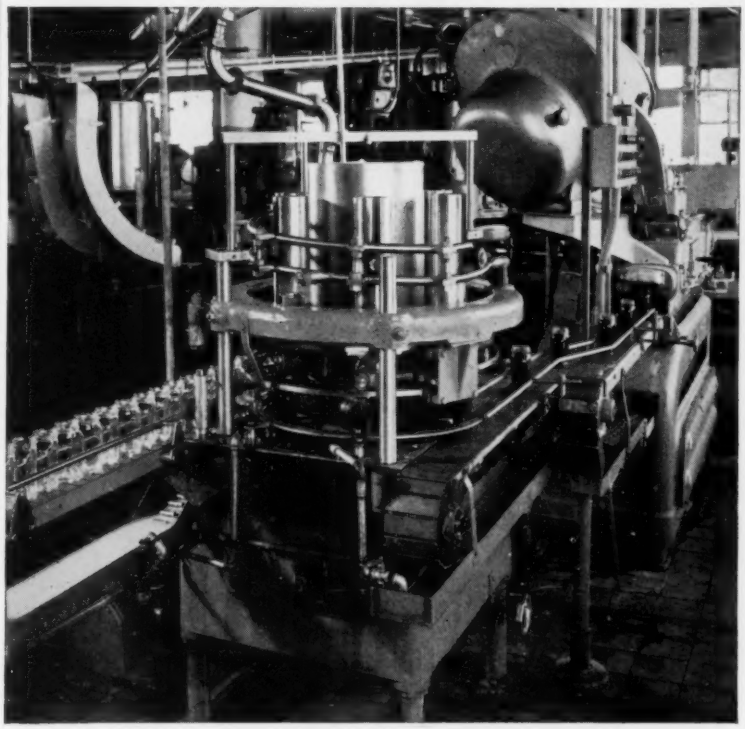
126—Heat Sealer

A data sheet gives specifications for a heavy-duty pneumatic heat sealer. Machine seals bags, pouches, envelopes, barriers, etc. made of kraft and scrim-backed laminates, cellophane, foil, Pliofilm, and others. For more information write: Wrap-Ade Machine Co., Dept. PE, 188 Sargeant Ave., Clifton, N.J., or *circle number on card.*

127—Silicone-Coated Papers

Being offered are samples and a brochure on silicone-coated papers. Coatings are available on kraft, glassine, parchment, bags, boxes,

FLUIDICS* AT WORK



How to fill even viscous hot fudge with speed and accuracy

If you have problems filling heavy or viscous products accurately without losing speed, consider the experience of the Robert A. Johnston Company with their six-station Pfaudler® rotary piston filler.

Mr. A. O. Meyer, Plant Manager, says, "The Pfaudler filler has been giving us some very good results. We fill approximately 55 six- or eight-ounce jars per minute with heavy hot fudge without a spill. And we also package caramel, butterscotch and chocolate syrup.

"The filler takes only about a half hour to clean thoroughly. We've had very little maintenance with it. In fact, all it really needs is a routine cleaning and lubrication."

The RP-6 filler is the smallest in the Pfaudler line . . . an ideal model for filling small lots of a number of products. Change-over for various container heights takes only about 12 minutes. Other models of the rotary piston filler will handle up to 1050 cans a minute. All these fillers are rated to ±0.1 fluid ounce accuracy for most products.

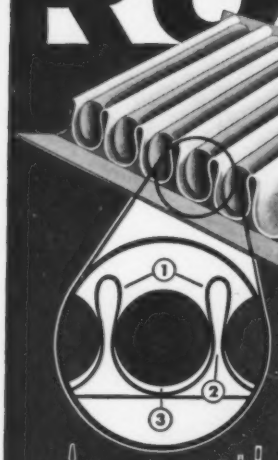
If you'd like the full story on the complete line, write to our Pfaudler Division, Dept. **PE-110**, Rochester 3, New York.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS...the science of fluid processes

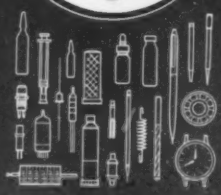
RONDO®



"the pack with the built-in shock absorber"

Holds and protects inserted items by the spring-clip action of its fluted partitions. The restricted opening ① and the spaces between ② and beneath ③ are the basic elements of this unique package.

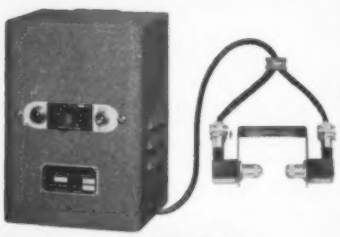
Applications for various articles from 1/16" to 1¼" diameter for many industries.



SOME OF THE RONDO STYLES

RONDO OF AMERICA, INC.
100P SANFORD STREET, HAMDEN 14, CONN.

For more information circle No. 280 on Reader Service Card



POST ELECTRONIC PRODUCTS

Model K-1A — When the light beam is not interrupted — output relay is energized.
Model K-1B — When the light beam is interrrupted — output relay is energized.

Model K-2 — Photoelectric timer with adjustable (.05-10 sec.) output relay closure.

Model K-3 — Photoelectric stop-motion and jam detector:
K-3R — When light beam is interrupted for the present time delay-output relay is energized.
K-3F — When light beam interruptions cease for a preset time delay-output relay is energized.

Decitron

POST ELECTRONIC PRODUCTS

Division of Reid Brothers Company, Inc.
12 LOTHROP ST. / BEVERLY, MASS.

For more information circle No. 281 on Reader Service Card

boards, drums, liners, interleaving, etc. For more information write: Ludlow Corp., Dept. PE, Needham Heights, Mass., or *circle number on card.*

128—Packaging Machinery

In a 24-page catalog, a varied line of packaging equipment is described. Illustrations and specifications are presented on weighers and fillers of dry free-flowing products for cartons and bags, wrapping machines, and a liquor bottle strip stamp unit. For more information write: Wright Machinery Co., Div. of Sperry Rand Corp., Dept. PE, Calvin & Holloway Sts., Durham, N.C., or *circle number on card.*

129—Interior Packaging

A 12-page pamphlet, KKD-38, discusses types of Kimpak interior packaging material. Included are stock thicknesses and widths, its use in military packaging specifications, and tests for cushioning and surface protection. For more information write: Kimberly-Clark Corp., Dept. PE, Neenah, Wis., or *circle number on card.*

130—Taping Equipment

To illustrate and describe manual, semiautomatic, and automatic taping and dispensing equipment for all Scotch-brand pressure-sensitive tapes, Catalog P-IDEM (1192.S) is available. For more information write: Minnesota Mining and Mfg. Co., Dept. PE, 900 Bush Ave., St. Paul 6, Minn., or *circle number on card.*

131—Form-Fill-Seal Unit

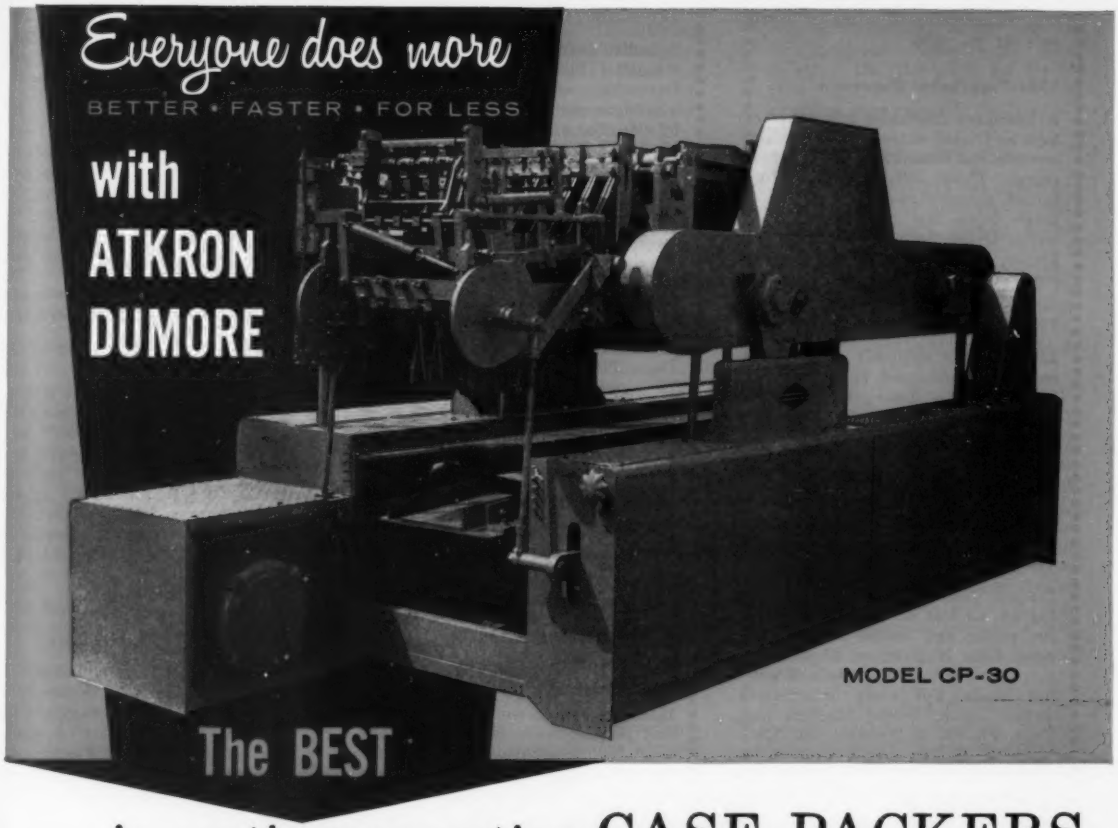
A 4-page bulletin provides details on a machine which forms, fills, and seals a variety of products into bags of heat-sealable materials. Called the Verti-Pak, the unit is air-operated and automatic. For more information write: Mercury Heat Sealing Equipment Co., Dept. PE, 2601 N. Howard St., Philadelphia 33, Pa., or *circle number on card.*

132—Cartridge Heaters

In a 12-page pamphlet, descriptions are given of all standard cartridge-type heating units, plus information on special sizes and shapes, ceramic units, air heaters, etc. For more information write: Hotwatt, Inc., Dept. PE, 75 Maple St., Danvers, Mass., or *circle number on card.*

133—Quick-Release Hook

A data sheet describes a manually (or solenoid) operated quick-release hook used to perform drop tests. The suspension hook may be used on products weighing up to 6,000 lb. For more information write: L.A.B. Corp., Dept. PE, P.O. Box



. . . in continuous motion CASE PACKERS

COMPLETELY AUTOMATIC AND EFFICIENCY ASSURED

Whether packing bottles, cans, jars, or even rectangular units, such as six-pack beverage cartons, Atkron Dumore Case Packers have established records for speed and efficiency that recommend them to every producer of packaged goods. Utilizing a single, interchangeable packing head, which permits one machine to handle a variety of container sizes and types with only minutes required for any changeover, Atkron Dumore Case Packers compress maximum capacity into minimum floor space. And they are designed to fit easily into any conveyor layout.

- **High Speed** . . . Models available for speeds up to 32 cases per minute.
- **Automatic** . . . Requires only the casual attention of ONE operator.
- **Efficient** . . . Any irregularities in case or container supply are automatically compensated to assure full cases at every drop.
- **Fully Protected** . . . Automatic controls prevent damage to the machine or the material being packed.
- **Quick Changeover** . . . Any changeover for different cases and containers can be accomplished in 20 minutes or less.
- **Simple Design** . . . Simple, continuously operating conveyors route cases and containers through the Case Packer and the packing drop is accomplished by simple cams and mechanical linkages. No complex reciprocating mechanisms.
- **Versatile** . . . A single unit handles a variety of container sizes and types through a system of quickly interchangeable packing heads.
- **Compact** . . . Occupying space approximately 4' x 9½' in the conveyor line, Atkron Dumore Case Packers are designed to receive containers and cases and to discharge filled cases at standard conveyor heights, fitting easily into any plant layout.

Nothing we say concerning the superiority of Atkron Dumore Case Packers can equal an actual inspection of the equipment in the service of satisfied users. We will be happy to arrange this on request.

ATKRON DUMORE

MANUFACTURED BY ATKRON, INC., CUYAHOGA FALLS, OHIO

Distributed and Serviced exclusively by

GEO. J. MEYER MANUFACTURING CO. MILWAUKEE, WIS.

and

ECONOMIC MACHINERY CO. WORCESTER 3, MASS.

Division of Geo. J. Meyer Manufacturing Co.

AT-760-69

278, Skaneateles 5, N.Y., or *circle number on card.*

134—Tape/Label Dispensers

A brochure illustrates a number of tape and label dispensers, including electric and manually operated machines. Units handle kraft, reinforced, gummed, and pressure-sensitive tapes. For more information write: Derby Sealers, Inc., Dept. PE, Derby, Conn., or *circle number on card.*

135—Cushioned Bags

Literature is available on Jet-Pak insulated, cushioned shipping bags. Included is a description of their construction, how to use them, and a list of 14 stock sizes. For more information write: Columbia Rope Co., Jet-Pak Packaging Div., Dept. PE, Auburn, N.Y., or *circle number on card.*

136—Closing Machines

Bulletin No. 300 is a 16-page catalog on its line of closing machines for paper and textile bags of all sizes. Data is given on 25 different machines styles and 7 types of sewing heads. For more information write: Union Special Machine Co., Dept. PE, 487 N. Franklin St., Chicago 10, Ill., or *circle number on card.*

137—Color/Light Visualizer

A leaflet describes a color and light visualizer incorporating three different light sources—north daylight, incandescent, and fluorescent—side by side. For more information write: Macbeth Daylighting Corp., Dept. PE, Newburgh, N.Y., or *circle number on card.*

138—Gummed Tapes

A pamphlet shows construction features of various types of reinforced gummed tape. Specifications and samples are included. For more information write: Central Paper Co., Dept. PE, P.O. Box 330, Menasha, Wis., or *circle number on card.*

139—Label Papers

Included in a swatch booklet of various types of Davac label papers is a description of advantages including: ability to lay flat, higher labeling speeds, better adherence, etc. For more information write: Nashua Corp., Dept. PE, 44 Franklin St., Nashua, N.H., or *circle number on card.*

140—Coated Papers

Information and samples of Polycel and polyethylene-coated papers are available. Brochure discusses automatic packaging with coated papers. For more information write: H. P. Smith Paper Co., Dept. PE, 5011 W. 66th St., Chicago 38, Ill., or *circle number on card.*

141—Bagging Equipment

A series of letters from users describes advantages of the Bar-Nun net weigher and the Bar-Nun bag feeder, opener, and weigher. This 4-page brochure illustrates range of models available. For more information write: B. F. Gump Co., Dept. PE, 1345 S. Cicero Ave., Chicago 50, Ill., or *circle number on card.*

142—Corrugated Tests

"How Gaylord's Research and Development Department Guards the Quality of Gaylord Boxes" is the title of an 8-page brochure. It explains in detail 12 tests on corrugated board and shipping containers. For more information write: Gaylord Container Div., Crown Zellerbach Corp., Dept. PE, 111 N. 4th St., St. Louis 2, Mo., or *circle number on card.*

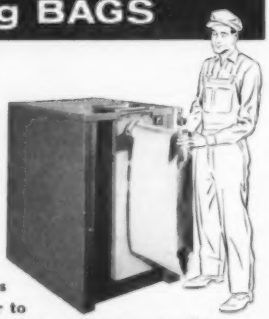
143—Adhesives/Applicators

Offered is a 16-page booklet describing Thermogrip hot-melt adhesives (supplied in rope-like form on coils) and a variety of applicators for the material. For more information write: United Shoe Ma-

CUT COSTS
for Packing BAGS

FILL and WEIGH with

CODDINGTON
AUGER-MATIC
Bag Packer



Low Cost, portable AUGER-MATIC packs any material from powder to pellets in paper bags . . . shuts off automatically when desired weight is reached.

Valve bags fit snugly on AUGER-MATIC spout so no dust escapes . . . keeps bags clean . . . eliminates costly tieing or bag closing equipment.

--------FILL OUT AND MAIL TODAY---------

E. D. CODDINGTON MFG. CO.
5048 N. 37th Street, Milwaukee 9, Wisconsin

Please send me facts on Cutting Valve Bag Packing Costs

MY NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

looking for...
more speed

More speed, more production — more profits. Simple! High speed resin adhesives permit production at top machine speeds.

What is *your* gluing operation? Package making and sealing, case sealing, glued lap, tear tape, tube winding, folding box, bag making?

Prove to yourself how these high speed Findley resin adhesives can give you more speed and cut your production costs.

Let us show you how to . . .

put SPEED in your production with

Findley's INDUSTRIAL ADHESIVES exclusively

Dept. P.E., Milwaukee 45, Wisconsin

chinery Corp., Dept. PE, 140 Federal St., Boston 7, Mass., or *circle number on card.*

144—Screw Capper

In an information sheet, a high-speed screw capper, Model RU-120, is described. Quick changeover and variable speed drive are among features presented. For more information write: Resina Automatic Machinery Co., Inc., Dept. PE, 572 Smith St., Brooklyn 31, N.Y., or *circle number on card.*

145—Boil-In-Bag Packaging

A 22-page booklet reports on the boil-in-bag packaging and cookery movement. Technical areas of basic research and machinery development are presented. For more information write: Reynolds Metals Co., Dept. PE, 6601 W. Broad St., Richmond 18, Va., or *circle number on card.*

146—Sensing/Switching System

Sonac, a new ultra-sonic, non-contact sensing and switching system is presented in Catalog 4-1. Unit may be used for automatic counting, routing, size control, positioning, web break detection, etc. For more information write: Delavan Mfg. Co., Dept. PE, West Des Moines, Iowa, or *circle number on card.*

147—Film Resin

Information on Marlex TR-101 resin is provided in a file. The olefin polymer resin for extrusion into film is suited for packaging bulk products and for non-bag applications. For more information write: Phillips Chemical Co., Plastics Sales Div., Dept. PE, Bartlesville, Okla., or *circle number on card.*

148—Glass Coating

A digest of facts about Ball all-purpose coating for glass containers is available. Descriptions and results of laboratory tests are presented. For more information write: Ball Brothers Co. Inc., Dept. PE, 1509 Macedonia Ave., Muncie, Ind., or *circle number on card.*

149—Labeling Machines

Standard-Knapp vertical and horizontal labelers are described in separate 2-page bulletins. Information includes complete specifications, plan view, and operations features. For more information write: Emhart Mfg. Co., Portland Div., Dept. PE, 127 Main St., Portland, Conn., or *circle number on card.*

150—Flexible Packaging

A brochure tells of Kehr's new flexible packaging plant and the services available. The company says it is capable of handling almost every type of flexible packaging product. For more information write: Kehr Products Co., Dept. PE, 527 Davisville Rd., Willow Grove, Pa., or *circle number on card.*

151—Pressure-Sensitive Tapes

A folder outlines the properties and characteristics of pressure-sensitive Teflon, fiber glass, silicone rubber tapes. Temp-R-Tape is designed to eliminate sticking at heat-sealing bars, chutes, conveyors, etc. For more information write: Connecticut Hard Rubber Co., 407 East St., New Haven 9, Conn., or *circle number on card.*

152—Package Cushioning

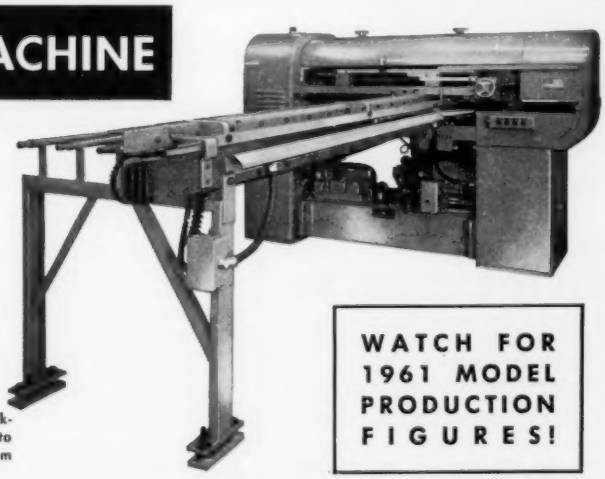
A descriptive brochure is available on Resilo-Pak, a newly developed type of cushioning material made from selected polystyrene beads which are expanded into molded form and tempered. For more information write: Armstrong Cork Co., Cushioning Sales Dept., Building Products Div., Dept. PE, Lancaster, Pa., or *circle number on card.*

153—Rotary Vacuum Filler

A rotary vacuum filler for any free-flowing and semi-viscous liquid—light or heavy, foamy or syrupy—

For The **Right Size** Container Every Time . . .

Rite-Size BOX MACHINE



- ***Eliminates*** **packing line slowdowns and shutdowns.**
- ***Converts*** **box storage areas into manufacturing space**
- ***Reduces*** **box inventory investment**
- ***Cuts*** **unit cost of packages**

The Rite-Size Box Machine with auxiliary equipment is designed to make corrugated boxes *right in your own plant* — as you need them. It produces any size and style box you require, in small or large lots, quickly, accurately, and at lower cost! (A complete change in container dimensions takes only a minute and one-half).

With a Rite-Size Machine, box production can be coordinated with packing line requirements . . . to eliminate slowdowns and shutdowns due to box shortages. Packaging is better, too, because boxes can be custom dimensioned to your products.

A complete box making department takes only 1600 square feet of space, *including storage*. Reductions in container storage areas alone have resulted in floor space savings as high as 90% in many plants!

WATCH FOR 1961 MODEL PRODUCTION FIGURES!

Investigate the advantages of "in-plant" box making, today. There's no obligation. Write, phone, or wire for complete details.

COLT PACKAGING MACHINERY COMPANY 53 WASHINGTON AVENUE, CRANSTON 7, R. I.

Cady Exact Micrometers Dead Weight 10/1000ths Spring Action & Portable

•

Test for QUALITY CONTROL

Papers/Films/Foils/Boards

Cadytest Instruments are designed for accuracy in determining or comparing thicknesses, basis weights, or bursting strength. They are available in stock models, or specials for specific tasks. Write for Brochure and Prices, showing entire line.

E. J. CADY & CO.
Manufacturers
674 N. Harlem
River Forest, Illinois

Cady 10/1000 Micrometer

Carbide-Tipped Anvils Available on All Mikes

Circle No. 286 on Card

CUT *SHIPPING MATERIAL AND LABOR* **COSTS**

NEW!
BETTER PACK 555 - ELECTRIC

Fastest gummed tape sealer! Feather-touch key feed! 5 operations in 1 second—electrically! Selects, measures, moistens with hot water, cuts and delivers any gummed tape with effortless speed of heavy industrial shipment-sealing equipment...at a fraction of the price. Ask for Proof-Demonstration without obligation.

Better Packages, inc. 253 Canal St Shelton, Conn.

Name_____

Company_____

Address_____

City_____ Zone____ State____

Circle No. 288 on Card

is described in a 4-page brochure. Model MS-24 handles containers from 1 oz. to 1 gal. capacity and may be adapted to almost any speed range. For more information write: Machinery Service Co., Dept. PE, 214 Eiler Ave., Louisville 14, Ky., or *circle number on card.*

154—Plastic Trays

Food, drug, hardware, toy, and electronic parts manufacturers can utilize the custom-formed plastic trays described in an illustrated folder. For more information write: The Pantasote Co., Panta-Pak Div., Dept. PE, 415 Madison Ave., New York 17, N.Y., or *circle number on card.*

155—Uncasers

A brochure is available on Atkron Dumore universal uncasing equipment which handles standard and non-standard cases, carry-home cartons, and bottles including 4-flap and open cases. For more information write: Atkron, Inc., Dept. PE, P.O. Box 311, Cuyahoga Falls, Ohio, or *circle number on card.*

156—Polypropylene Properties

Molding and extrusion characteristics of Tenite polypropylene and its physical, mechanical, electrical, and other properties are explained in a booklet. For more information write: Eastman Chemical Products, Inc., Plastics Div., Dept. PE, 260 Madison Ave., New York 16, N.Y., or *circle number on card.*

157—Bag Filler

An automatic open-mouth bag filling machine is presented in a 6-page pamphlet. Equipment handles most free-flowing products and operating details are enumerated. For more information write: Kraft Bag Corp., Gilman Paper Co. Subsidiary, Dept. PE, 630 Fifth Ave., New York 20, N.Y., or *circle number on card.*

158—Liquid Fillers

A 24-page booklet describes Filamatic portable fillers for dispensing a wide variety of liquid or semi-liquid products into cans, ampoules, or pouch-type containers. For more information write: National Instrument Co., Inc., Dept. PE, 4123 Fordleigh Rd., Baltimore 15, Md., or *circle number on card.*

159—Staple Gun

A leaflet provides information on the model S-762 Duo-Fast staple gun. Air-operated tool will handle staples up to 1½ in. long. For more information write: Fastener Corp., Dept. PE, 3756-64 River Rd., Franklin Park, Ill., or *circle number on card.*

(Turn Page)

A message to

Package research and development departments
Engineering departments
Technical & research libraries
Everyone concerned with what is being written in the world of packages

We recently were appointed American agents for Packaging Abstracts, published by the British research association PATRA—The Printing, Packaging & Allied Trades Research Association. This service gives you in a single, handy periodical (5½ x 8½-in., averaging 75 pages a month, plus the annual index), brief summaries of packaging articles that have appeared in some 200 packaging magazines plus over 150 magazines devoted to printing and allied subjects, and numerous patents, books, pamphlets, and technical data provided by makers of machinery and materials. An average issue carries about 400 abstracts based on literature received from all parts of the world.

Examine It 10 Days Free

Mail the coupon to us and we will mail you a sample copy of the current issue. You may return it in 10 days and you owe us nothing. If you keep it, we will mail you subsequent issues and the annual index as they come off the press, and bill you $42.00 for a one-year subscription.

Free Examination Form

PACKAGING ABSTRACTS
185 N. Wabash Avenue
Chicago 1, Illinois

Gentlemen:

Please send me a copy of *Packaging Abstracts* for 10 days' free examination. I understand that I may return the copy in 10 days and I owe you nothing. If I do not return it, you may bill me $42.00 for a year's subscription.

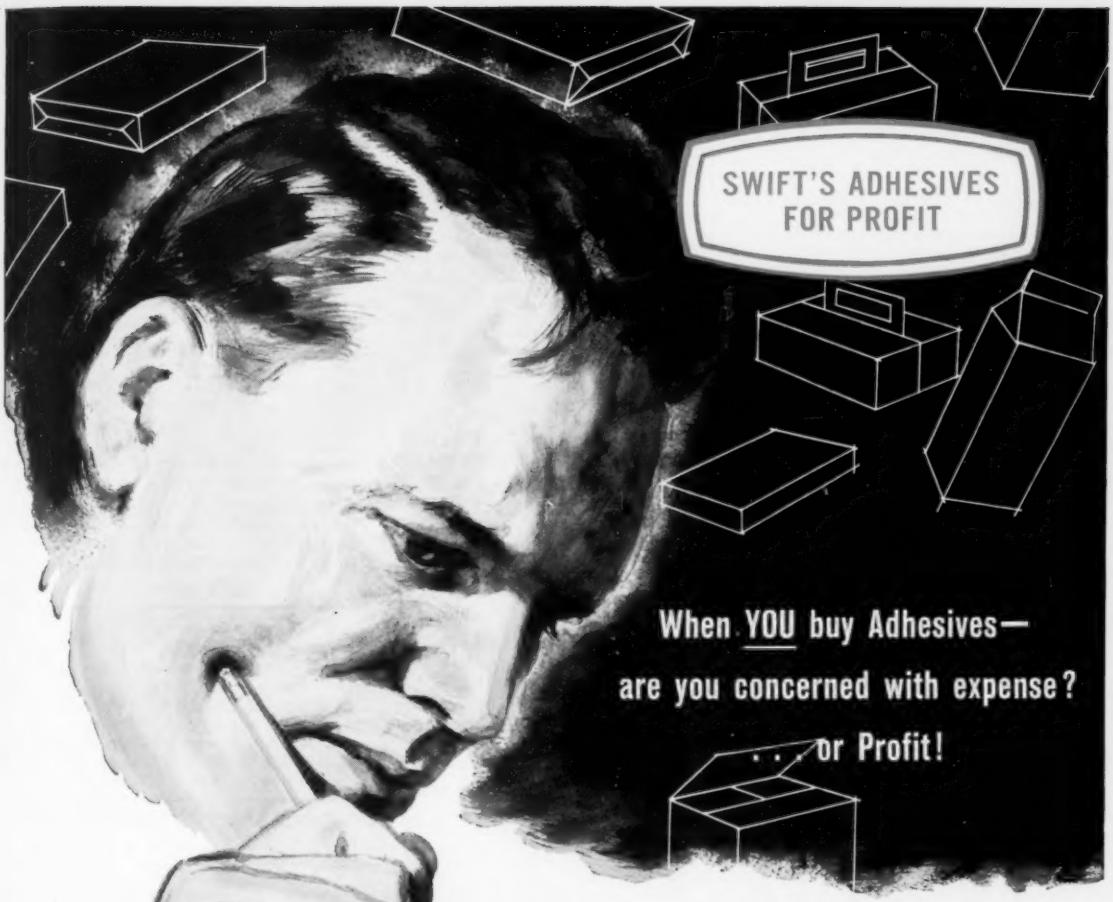
Name_____

Title_____

Company_____

Address_____

City_____ Zone___ State____



Because Adhesive Selection is a Factor in Packaging Profits . . . Regardless of Your Equipment Setup, or Your Plant Facility, or Your Labor Force!

When you select your packaging adhesives, you are helping to determine your rate of production. And production is profit. Obviously, the more production your present packaging setup will deliver the more profit you will earn.

Therefore, the speed, machine-ability and tack of your adhesives are very important. Your adhesives must do much more than just "adhere."

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A-55

160—Flow-Control Tables

A bulletin is available illustrating and describing a new unscrambling and flow control table. Bulletin T317 shows how it can be adapted for normal flow, transferring, accumulating, etc. For more information write: The Lodge & Shipley Co., Climax Products Div., Dept. PE, 3055 Colerain Ave., Cincinnati 25, Ohio, or *circle number on card.*

161—Retaining Papers

Offered is a folder of samples providing information on a variety of retaining papers for unitized loading of freight cars and protection against moisture. For more information write: Thilmany Pulp & Paper Co., Dept. PE, Kaukauna, Wis., or *circle number on card.*

162—Shipping Boxes

A manual presenting national standards for cleated plywood and veneer shipping boxes has been published. For more information write: Navan Products, Inc., Dept. PE, 900 N. Sepulveda Blvd., El Segundo, Calif., or *circle number on card.*

163—Balances

The Series "K" balances are general-purpose, high-speed precision scales designed for small-capacity weighing operations. The specifications of the device are presented in a leaflet. For more information write: The Exact Weight Scale Co., Dept. PE, 912 W. 5th Ave., Columbus 8, Ohio, or *circle number on card.*

164—Clutch/Brake Applications

Available is a complete-line product brochure entitled "Tailored Torque." It explains operating principle and describes several clutch, brake, and clutch-brake applications. For more information write: Warner Electric Brake & Clutch Co., Dept. PE, Beloit, Wis., or *circle number on card.*

165—Drug Packaging

A variety of machines for the packaging of pharmaceutical products are presented in a brochure. For more information write: The Lakso Co., Inc., Dept. PE, 47 Ashby Rd., Fitchburg, Mass., or *circle number on card.*

166—Glass Fiber

Technical data on properties of glass fiber are a feature of Bulletin TD-100. Applications of fiber glass are also listed. For more information write: Fibrous Glass Products, Inc., Dept. PE, Alpa Plaza, Hicksville, L.I., N.Y., or *circle number on card.*

(End)

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What we think

We need a Congress committed to individual freedom and growth

Anyone who has contributed anything at all to the success and growth of packaging has a special stake in preventing the socialistic, paternal do-gooders from inducing government to grab a bigger chunk of our gross national product than it now grabs.

Unless we defeat and utterly rout the senatorial and congressional incumbents and candidates (of whatever party) addicted to the doctrines of these collectivist poachers on individual freedom, we are in for trouble. Their nefarious efforts to whittle down the individual is bad enough, but what they would do to our economy is worse.

We agree with Paul Mazur, a senior partner of Lehman Brothers, who recently warned a Harvard Business School audience that we have among us those believing that Americans are not giving enough of their income to socially desirable purposes. This cult would have an all-wise state direct more of our spending into such areas as social welfare.

These meddlers think government can do a better job of making decisions than can the people who earn the money and produce the gross national product. The tax-eaters, thus, would take more away from us taxpayers, "wisely" relieving us of the responsibility for our own decisions about spending our money.

We flatly reject the suggestion that the American wage earner and taxpayer should meekly surrender more and more freedom of choice to the would-be do-gooders who want to run our lives for us through controlled dosages of health, education and welfare, for instance. We think candidates committed to such doctrines forfeit the support and respect of American voters.

"Washington" note: the individual is paramount

We have got to stop this deadly trend away from the recognition of the innate dignity of the individual. Under democracy, the state exists for the individual and is the means to an end. Under totalitarianism, the state is all-powerful, virtually the end in itself and the individual exists for the state.

If people in packaging don't think that this vicious whittling-away process applies to them, they had better take another look. As Mr. Mazur reminds us, another effect of ever-expanding government is to sap our economic strength. This is wilful and wanton destruction of our ability to consume. And no one knows better than technical and operational packaging people (whose developmental and production-line miracles have opened vast new markets) that our whole economy rests on the ability of consumers to buy and use.

So, if you elect congressmen and senators who let the government take more of our money than it really needs, everyone has less to spend, say, on consumer products. In simplest terms this means we all eat less. More basically, the bigger the bite of the government, the less there is for research, for expansion, for the development of new technologies, new markets.

Even more basically, it leads to a stale climate of inertia and throttled progress. If this hasn't yet hit you, ask somebody whose choice of packaging materials has been inhibited by unwise provisions of the Food Additives Amendment. Or, chat with the people who were packaging cranberries last year. And if you cherish the notion that unchecked governmental activity is wise and responsible, just ask some of your packaging friends in pharmaceutical companies under "investigation."

This concerns all of us, but if we in packaging expect to make the most of "the 60's," we had better send people to Washington who believe in the same things we do and who can resist the lobbyists and pressure groups who prefer an all-wise state to a state subordinate to the individual. If you think we are exaggerating this warning, next time you go to Washington, take a look at the enormous National Education Association building and take a look, too, at its plans for you and your children. And this is just *one* lobby!

Quite apart from our desires to make the most of packaging and realize our hopes for it, the broader challenge faces us: we must elect senators and representatives committed to the American way of life and its opportunities for personal freedom and individual development.

Bruce Hoffman

Editor

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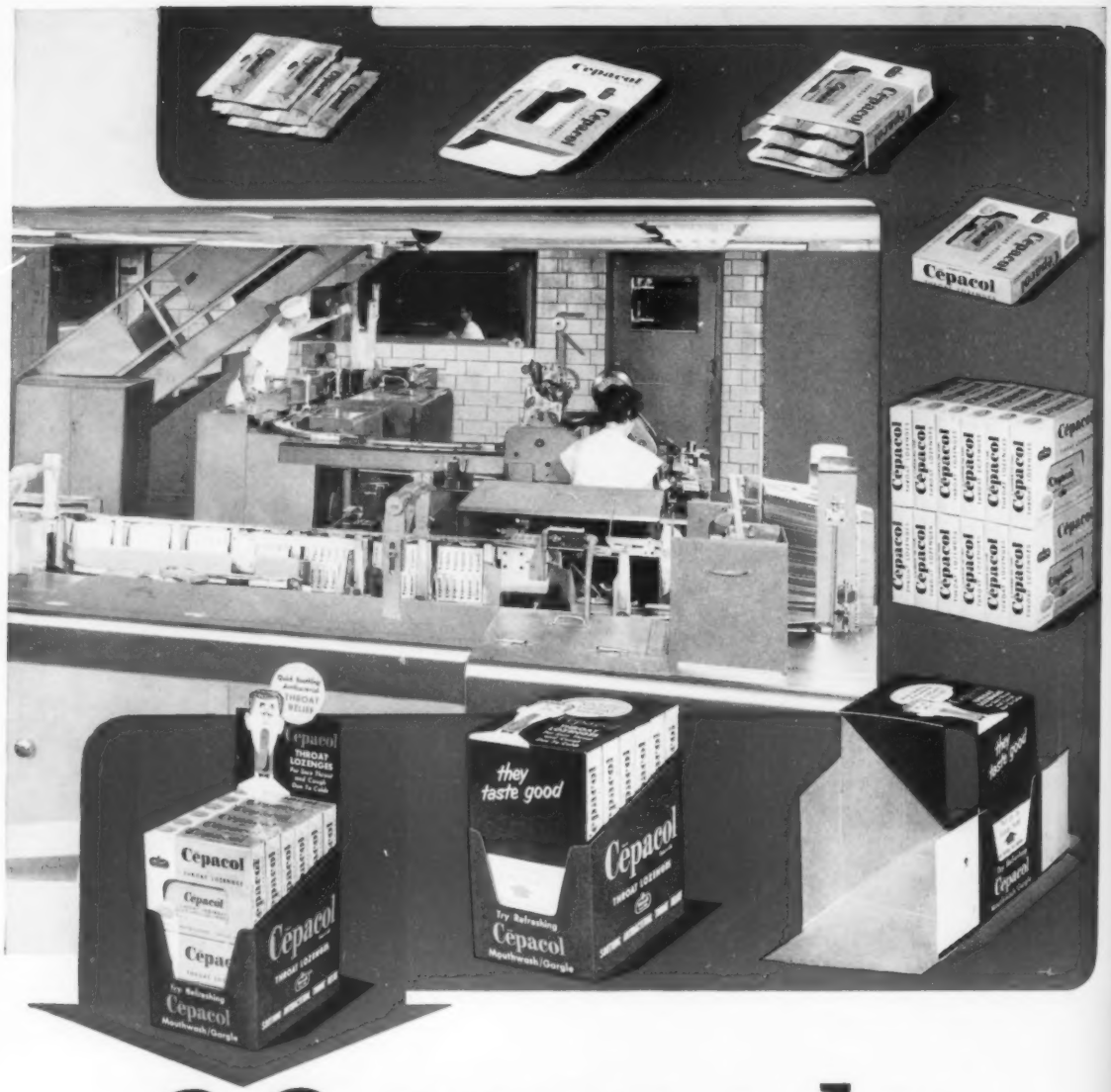

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